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ABSTRACT

These cluster matrices provide duties and tasks that form the basis of instructional content for secondary, postsecondary, and adult training programs industrial health occupations. The 14 clusters (and the job titles included in each cluster) are as follows: (1) construction (bricklayer, carpenter, building maintenance worker, electrician, maintenance painter, plumber/pipefitter); (2) electronic (computer repair technician, electrical and electronic technician); (3) graphic communications (commercial artists, compositors and/or typesetters, offset lithographic press operators, printing photographers, camera operators); (4) transportation (automotive mechanic, diesel mechanic, gasoline engine/mower repair); (5) manufacturing (machine tool operator, machinist, tool and die maker, punch press operator, sheet metal worker, combination welder, maintenance repairer, automated manufacturing systems technician, thermoplastic machine set-up specialist); (6) technical preparation (computer repair technician, electrical and electronic technician, automated manufacturing systems technician); (7) auto body repairer; (8) bus driver; (9) drafter/computer-aided drafter; (10) truck driver; (11) correction officers and jailers; (12) electric home appliance and power tool repairer; (13) office machine/cash register repairer; and (14) telephone and cable television line installers/repairers. (YLB)

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Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

ED336585

1988

CLUSTER MATRICES

FOR

INDUSTRIAL OCCUPATIONS

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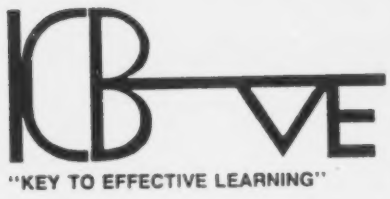

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Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

CONSTRUCTION CLUSTER

Bricklayer
Carpenter
Building Maintenance Worker
Electrician
Maintenance Painter
Plumber/Pipefitter
*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

These materials were prepared under contract with the Illinois State Board of Education, Department of Adult, Vocational and Technical Education ("Illinois Competency Based Vocational Education Project," contract number PS-10-130).

B = Bricklayer
C = Carpenter
M = Building Maintenance Worker
E = Electrician
MP = Maintenance Painter
PP = Plumber/Pipefitter

APPLYING SAFETY PRACTICES

		B	C	M	E	MP	PP
705A001	Comply with shop and equipment safety rules	X	X	X	X	X	X
705A002	Apply basic emergency first aid techniques	X	X	X	X	X	X
705A003	Complete accident reports	X	X	X	X	X	X
705A004	Inspect workplaces for safe working environment	X	X	X	X	X	X
705A005	Report shop, environmental and equipment safety violations	X	X	X	X	X	X
705A006	Demonstrate use of fire extinguishers	X	X	X	X	X	X
705A007	Participate in disaster control exercises	X	X	X	X	X	X
705A008	Participate in shop safety committees	X	X	X	X	X	X
705A009	Correct safety hazards	X	X	X	X	X	X
705A010	Demonstrate cardiopulmonary resuscitation techniques	X	X	X	X	X	X
705A011	Participate in safety training programs	X	X	X	X	X	X
705A012	Evaluate personnel safety violations	X	X	X	X	X	X

PERFORMING SUPERVISORY FUNCTIONS

		B	C	M	E	MP	PP
705B001	Determine availability of machines, supplies and materials	X	X	X	X	X	X
705B002	Requisition, schedule and distribute supplies and materials	X	X	X	X	X	X
705B003	Coordinate workers with work to be done	X	X	X	X	X	X
705B004	Schedule and control shop flow of jobs	X	X	X	X	X	X
705B005	Maintain files	X	X	X	X	X	X
705B006	Maintain service records	X	X	X	X	X	X
705B007	Maintain labor records	X	X	X	X	X	X
705B008	Maintain warranty records	X	X	X	X	X	X
705B009	Explain work requirements	X	X	X	X	X	X
705B010	Inventory supplies and equipment	X	X	X	X	X	X
705B011	Maintain charts, tables, graphs or status boards on work scheduled	X	X	X	X	X	X
705B012	Check job/time cards	X	X	X	X	X	X
705B013	Inspect shop equipment and arrange for maintenance and repair work	X	X	X	X	X	X
705B014	Follow up employee reports of problems or equipment failures	X	X	X	X	X	X
705B015	Draft correspondence	X	X	X	X	X	X
705B016	Inspect quality of brickwork	X					
705B017	Order masonry supplies and equipment	X					
705B018	Orient new employees	X	X	X	X	X	X
705B019	Prepare bids for contract masonry work	X					
705B020	Prepare masonry budgets	X					
705B021	Prepare estimate of brickwork	X					
705B022	Compute average cost rates for work performed	X	X	X	X	X	X
705B023	Determine actual costs of work completed	X	X	X	X	X	X
705B024	Write work schedules	X	X	X	X	X	X
705B025	Write technical reports	X	X	X	X	X	X
705B026	Plan and implement technical training for employees	X	X	X	X	X	X

		B	C	M	E	MP	PP
705B027	Evaluate employee progress and performance	X	X	X	X	X	X
705B028	Interview job applicants	X	X	X	X	X	X
705B029	Hire workers	X	X	X	X	X	X
705B030	Fire workers	X	X	X	X	X	X
705B031	Conduct meetings	X	X	X	X	X	X

PERFORMING HOUSEKEEPING AND RECORDKEEPING ACTIVITIES

		B	C	M	E	MP	PP
705C001	Clean and maintain work area and leave in safe condition	X	X	X	X	X	X
705C002	Follow tool crib procedures	X	X	X	X	X	X
705C003	Report problems to supervisor	X	X	X	X	X	X
705C004	Complete time cards	X	X	X	X	X	X
705C005	Complete job status reports	X	X	X	X	X	X
705C006	Make equipment failure reports	X	X	X	X	X	X
705C007	Determine basic maintenance procedures using manuals	X	X	X	X	X	X
705C008	Plan sequence of work operations	X	X	X	X	X	X
705C009	Use technical references	X	X	X	X	X	X
705C010	Participate in a participative management program (Quality Circles)	X	X	X	X	X	X

CONDUCTING SHOP OPERATIONS

		B	C	M	E	MP	PP
705D001	Answer customer questions	X	X	X	X	X	X
705D002	Troubleshoot customer problems	X	X	X	X	X	X
705D003	Perform public relations activities	X	X	X	X	X	X
705D004	Maintain records of service tools and equipment	X	X	X	X	X	X
705D005	Unpack and inspect new equipment	X	X	X	X	X	X
705D006	Receive and store parts and supplies	X	X	X	X	X	X
705D007	Update parts catalogs	X	X	X	X	X	X
705D008	Modify wiring diagrams to reflect repair changes		X	X	X		
705D009	Make out material lists used on each job	X	X	X	X	X	X
705D010	Complete work orders	X	X	X	X	X	X

ESTIMATING MATERIALS

		B	C	M	E	MP	PP
705E001	Estimate forming materials	X	X	X			
705E002	Estimate concrete	X	X	X			
705E003	Estimate concrete blocks	X	X	X			
705E004	Estimate rough framing materials	X	X	X			
705E005	Estimate roofing materials		X	X			
705E006	Estimate windows		X	X			
705E007	Estimate doors and jambs		X	X			
705E008	Estimate interior underlayment		X				
705E009	Estimate interior panels		X	X			
705E010	Estimate stairway materials		X	X			
705E011	Estimate closet accessories		X	X			
705E012	Estimate acoustical ceiling materials		X	X			
705E013	Estimate prefabricated cabinets		X	X			
705E014	Estimate materials for built-ins		X	X			
705E015	Estimate finish hardware		X	X			
705E016	Estimate siding		X	X			
705E017	Estimate cost of jobs	X	X	X	X	X	X

PREPARING BUILDING SITE

		B	C	M	E	MP	PP
705F001	Establish elevation reference points from bench mark	X	X				
705F002	Establish footing grades	X	X				
705F003	Locate and square corners	X	X				
705F004	Install batter boards	X	X				
705F005	Set grade stakes	X	X				
705F006	Lay out buildings using transit	X	X				

PREPARING FOUNDATIONS AND FOOTINGS

		B	C	M	E	MP	PP
705G001	Build footings	X	X				
705G002	Build forms for concrete	X	X				
705G003	Construct piers	X					
705G004	Construct walls containing pilasters	X					
705G005	Raise foundations	X					
705G006	Waterproof foundations	X	X				
705G007	Construct stud and sheathing wall forms	X	X				
705G008	Erect plywood panel wall forms	X	X				
705G009	Erect manufactured wall forms	X	X				
705G010	Construct stair forms	X	X				
705G011	Strip forms	X	X				
705G012	Install beams	X	X				
705G013	Install anchor bolts in concrete	X					
705G014	Install anchor bolts in concrete blocks	X					
705G015	Install bulkheads	X	X				
705G016	Install keyway for footings and foundations	X	X				

LAYING, JOINTING AND POINTING BRICK

		B	C	M	E	MP	PP
705H001	Bond walls	X					
705H002	Build Gothic archs	X					
705H003	Build jack archs	X					
705H004	Build Roman archs	X					
705H005	Build segmental archs	X					
705H006	Build soldier archs	X					
705H007	Build Tudor archs	X					
705H008	Build corner brick columns	X					
705H009	Build rectangular brick columns	X					
705H010	Build round brick columns	X					
705H011	Build square brick columns	X					
705H012	Clean brick walls	X		X			
705H013	Construct brick veneer walls	X		X			
705H014	Construct cavity walls	X					
705H015	Cut bat closures	X					
705H016	Cut queen closures	X					
705H017	Form corbels	X					
705H018	Gage masonry walls with mortar scale	X					
705H019	Gage masonry walls with story pole	X					
705H020	Lay basket weave patterns	X					
705H021	Lay common bond patterns	X					
705H022	Lay diamond patterns	X					
705H023	Lay Dutch bond patterns	X					
705H024	Lay Flemish bond patterns	X					
705H025	Lay header courses	X					
705H026	Lay herringbone bond patterns	X					

		B	C	M	E	MP	PP
705H027	Lay rowlock courses	X					
705H028	Lay sailor courses	X					
705H029	Lay shiner courses	X					
705H030	Lay soldier courses	X					
705H031	Lay stack bond patterns	X					
705H032	Lay stretcher courses	X					
705H033	Lay American bond patterns	X					
705H034	Lay English bond patterns	X					
705H035	Lay fine bricks with clay	X					
705H036	Tool concave joints	X					
705H037	Tool convex joints	X					
705H038	Lay corners	X					
705H039	Tool rake joints	X		X			
705H040	Tool squeeze joints	X		X			
705H041	Tool V joints	X		X			
705H042	Mix cement mortar	X		X			
705H043	Mix mortar by hand	X		X			
705H044	Mix mortar with power mixer	X		X			
705H045	Point walls	X		X			
705H046	Reinforce brick masonry	X		X			
705H047	Tie doors to walls using anchors	X		X			
705H048	Tie walls together using anchors	X		X			
705H049	Cut bricks using masonry saw	X		X			
705H050	Cut bricks using partner saw	X		X			
705H051	Cut brick blocks using brick hammer	X		X			
705H052	Cut brick blocks using brick set	X		X			
705H053	Figure pitch using framing square	X		X			
705H054	Figure runs of rakes using framing square	X		X			
705H055	Mix slack lime mortar	X		X			

CONSTRUCTING RESIDENTIAL CHIMNEYS AND FIREPLACES

		B	C	M	E	MP	PP
705I001	Build double face chimneys	X					
705I002	Build single face chimneys	X					
705I003	Cut flue linings	X					
705I004	Install ash dumps	X					
705I005	Install clean-out doors	X					
705I006	Insert dampers	X					
705I007	Install heatilators	X					
705I008	Lay hearths	X					
705I009	Lay mantels	X					
705I010	Lay throats	X					
705I011	Lay backs of fireplaces	X					
705I012	Lay bottoms of fireplaces	X					
705I013	Lay sides of fireplaces	X					
705I014	Set flues	X					
705I015	Install log lighters	X					

CONSTRUCTING MASONRY BUILDINGS

		B	C	M	E	MP	PP
705J001	Build partitions	X		X			
705J002	Construct jambs	X		X			
705J003	Construct sills	X		X			
705J004	Damp proof walls	X		X			
705J005	Install wall ties	X		X			

		B	C	M	E	MP	PP
705J006	Lay flight of steps	X					
705J007	Make reinforced lintels	X					
705J008	Place beams	X					
705J009	Set door frames	X		X			
705J010	Set lintels	X		X			
705J011	Set windows	X		X			

CONSTRUCTING CONCRETE MASONRY

		B	C	M	E	MP	PP
705K001	Lay concrete blocks	X		X			
705K002	Lay running bond patterns in concrete masonry	X					
705K003	Lay vertical bond patterns in concrete masonry	X					
705K004	Pour concrete	X		X			
705K005	Screed concrete	X		X			
705K006	Finish concrete	X		X			

PERFORMING MISCELLANEOUS MASONRY WORK

		B	C	M	E	MP	PP
705L001	Construct manholes	X					
705L002	Construct planters	X		X			
705L003	Construct water fountains	X		X			
705L004	Fireproof beams	X		X			
705L005	Fireproof walls	X		X			
705L006	Install flashing	X		X			
705L007	Lay glass blocks	X		X			
705L008	Lay masonry driveways	X					
705L009	Lay masonry floors	X		X			
705L010	Lay masonry walks	X		X			
705L011	Lay ornamental lattice pattern walls	X					
705L012	Lay structural clay tiles	X					
705L013	Repair masonry work	X		X			
705L014	Set stones	X		X			
705L015	Set precast panels	X					
705L016	Anchor precast panels by welding, bolting or clamping	X					

SHARPENING TOOLS

		B	C	M	E	MP	PP
705M001	Sharpen wood chisels		X	X			
705M002	Hone plane irons		X	X			
705M003	Sharpen circular saw blades		X	X			
705M004	Sharpen twist drills		X	X			
705M005	Sharpen auger bits		X	X			

INSTALLING ROUGH FRAMING

		B	C	M	E	MP	PP
705N001	Stack lumber		X				
705N002	Install sill plates		X	X			
705N003	Frame walls		X				
705N004	Align and brace walls		X				
705N005	Construct plywood box beams		X				
705N006	Install diagonal wind bracing		X				
705N007	Frame floor openings		X				
705N008	Frame door openings		X				
705N009	Frame window openings		X				

		B	C	M	E	MP	PP
705N010	Frame roof openings		X				
705N011	Frame built-up stringers		X				
705N012	Frame cleated stair stringers		X				
705N013	Install floor joists		X				
705N014	Install cross-bridging		X				
705N015	Install ceiling joists		X				
705N016	Construct post and beam frames		X				
705N017	Install steel beams		X				
705N018	Install lally posts		X				
705N019	Install backing for hanging fixtures and cabinets		X	X			
705N020	Install exterior wall sheathings		X				
705N021	Install battens		X				
705N022	Install plyscore sub-floors		X	X			
705N023	Install diagonal sub-floors		X	X			
705N024	Install underlayment over sub-floors		X	X			
705N025	Install metal studs		X				
705N026	Set metal door frames for masonry construction		X	X			
705N027	Set metal window frames for masonry construction		X	X			
705N028	Construct roof trusses		X				
705N029	Install collar beams		X				
705N030	Install overhang purlins		X				
705N031	Install rafter support purlins		X				
705N032	Install ridgeboards		X				
705N033	Install common rafters		X				
705N034	Install tail rafters		X				
705N035	Install cripple jack rafters		X				
705N036	Install hip rafters		X				
705N037	Install hip jack rafters		X				
705N038	Install valley rafters		X				
705N039	Install valley jack rafters		X				
705N040	Install gambrel roof rafters		X				
705N041	Frame dormers without sidewalls		X				
705N042	Frame dormers with sidewalls		X				
705N043	Frame roof saddles		X				
705N044	Frame snub gables		X				
705N045	Install gable studs		X				
705N046	Construct intersecting gable roofs		X				
705N047	Install roof sheathings		X	X			

INSTALLING ROOF COMPONENTS

		B	C	M	E	MP	PP
7050001	Install roofing felts		X	X			
7050002	Install chimney flashs		X	X			
7050003	Install valley flashs		X	X			
7050004	Install composite strip shingles		X	X			
7050005	Install composite shingles on ridge cap		X	X			
7050006	Install composite shingles in valley		X	X			
7050007	Install composite shingles around roof opening		X	X			
7050008	Install shingles over dormers or roof appendages		X	X			
7050009	Install roof vents		X	X			
7050010	Install ridge vents		X	X			
7050011	Install skylights		X	X			
7050012	Install wood shingles/shakes		X	X			
7050013	Install wood shingles/shakes on ridge cap		X	X			
7050014	Install wood shingles/shakes in valley		X	X			

		B	C	M	E	MP	PP
705O015	Install wood shingles/shakes around roof opening		X	X			
705O016	Install gutters		X	X			
705O017	Install downspouts		X	X			

INSTALLING EXTERIOR FINISHES

		B	C	M	E	MP	PP
705P001	Construct box cornice		X				
705P002	Construct rake cornice		X				
705P003	Case exterior opening		X				
705P004	Install wood jamb window units		X	X			
705P005	Hang exterior doors		X	X			
705P006	Install exterior door jambs		X	X			
705P007	Install metal corners for aluminum or vinyl siding		X	X			
705P008	Install corner boards for wood siding		X	X			
705P009	Install wood fascia		X	X			
705P010	Install wood soffit		X	X			
705P011	Install aluminum fascia		X	X			
705P012	Install aluminum soffit		X	X			
705P013	Install prefabricated columns		X	X			
705P014	Install garage doors		X	X			
705P015	Install metal siding		X	X			
705P016	Install vinyl siding		X	X			
705P017	Install composition siding		X	X			
705P018	Install prefabricated storm doors		X	X			
705P019	Install prefabricated storm windows		X	X			
705P020	Install drip caps		X	X			
705P021	Install bevel siding		X	X			
705P022	Install lap siding		X	X			
705P023	Install wood shingle siding		X	X			
705P024	Install outside corners of wood shingle siding		X	X			
705P025	Install panel siding		X	X			
705P026	Construct and install wood louvers		X	X			
705P027	Install exterior shutters		X	X			

INSTALLING INTERIOR FINISHES

		B	C	M	E	MP	PP
705Q001	Install batt insulations		X	X			
705Q002	Install vapor barriers		X	X			
705Q003	Install wall panels		X	X			
705Q004	Assemble prefabricated cabinets		X	X			
705Q005	Install closet accessories		X	X			
705Q006	Install interior door jambs		X	X			
705Q007	Construct built-in cabinets		X	X			
705Q008	Install shelves		X	X			
705Q009	Install baseboards		X	X			
705Q010	Install ceiling molds		X	X			
705Q011	Hang drywalls		X	X			
705Q012	Case interior openings		X	X			
705Q013	Hang interior doors		X	X			
705Q014	Install prehung split jamb door units		X	X			
705Q015	Install double-acting doors		X	X			
705Q016	Install folding (accordian) doors		X	X			
705Q017	Install sliding doors		X	X			
705Q018	Install bi-fold doors		X	X			
705Q019	Install pocket doors		X	X			

		B	C	M	E	MP	PP
705Q020	Install cylinder locksets		X	X			
705Q021	Install mortise locksets		X	X			
705Q022	Install door closers		X	X			
705Q023	Install door holders		X	X			
705Q024	Install panic bars		X	X			
705Q025	Install flush bolts		X	X			
705Q026	Install door plates		X	X			
705Q027	Install weatherstripping		X	X			
705Q028	Install wall cabinets		X	X			
705Q029	Install base cabinets		X	X			
705Q030	Install recessed medicine cabinets		X	X			
705Q031	Install thresholds		X	X			
705Q032	Install gypsum lathes		X	X			
705Q033	Install corner beading for lathes		X	X			
705Q034	Install plaster grounds		X	X			
705Q035	Install parquet flooring		X	X			
705Q036	Install plank flooring		X	X			
705Q037	Install tongue and groove flooring		X	X			
705Q038	Install suspended T-grid ceiling		X	X			
705Q039	Install suspended concealed grid ceiling		X	X			
705Q040	Install tongue and groove ceiling tiles		X	X			

ASSEMBLING AND CONSTRUCTING STAIRS

		B	C	M	E	MP	PP
705R001	Install prefabricated stairs		X	X			
705R002	Install disappearing stair unit		X	X			
705R003	Construct open riser stairs		X	X			
705R004	Construct box stairs		X	X			
705R005	Install wood newel post, balusters and railings		X	X			
705R006	Install metal newel post and railings		X	X			

SELECTING ELECTRICAL MATERIALS AND DETERMINING WORK TO BE DONE

		B	C	M	E	MP	PP
705S001	Locate and lay out devices for job from a blueprint or schematic diagram			X	X		
705S002	Figure materials list from blueprint or schematic diagram			X	X		
705S003	Determine governing codes			X	X		
705S004	Determine type and size for splice and device boxes and covers			X	X		
705S005	Select location of inside panels and boxes				X		
705S006	Select type and size of wires			X	X		
705S007	Select mounting devices			X	X		
705S008	Select equipment disconnects				X		
705S009	Determine panelboards				X		
705S010	Select ground fault protections				X		
705S011	Select service entrance				X		
705S012	Select receptacles			X	X		
705S013	Select connectors			X	X		
705S014	Determine electrical insulations				X		
705S015	Determine physical protection of conductors			X	X		

COMPUTING SERVICE LOADS

		B	C	M	E	MP	PP
705T001	Balance the total load per phase			X	X		
705T002	Calculate individual circuit loads			X	X		
705T003	Calculate load in watts and load current in amps for entire job			X	X		
705T004	Compute size of service entrance conductors				X		
705T005	Design electrical systems				X		
705T006	Determine number of outlets per circuit			X	X		
705T007	Determine ground fault circuits			X	X		
705T008	Determine cost and practicality of underground or overhead service				X		
705T009	Determine location of inside panels and boxes			X	X		

INSTALLING ELECTRICAL ENVIRONMENTAL CONTROL COMPONENTS

		B	C	M	E	MP	PP
705U001	Install baseboard heat units			X	X		
705U002	Connect ceiling heating cables to thermostat			X	X		
705U003	Connect central electric heaters			X	X		
705U004	Connect furnace motors			X	X		
705U005	Connect line voltage thermostats			X	X		
705U006	Connect low voltage thermostats			X	X		
705U007	Install wall heaters			X	X		
705U008	Connect wiring for boiler control system				X		
705U009	Install ceiling heating cables			X	X		
705U010	Install central electric heaters				X		
705U011	Install furnace motors			X	X		
705U012	Install individual space heaters			X	X		
705U013	Install vent fans			X	X		
705U014	Install air conditioning units			X	X		
705U015	Install electrical environmental control systems				X		

INSTALLING LIGHTING FIXTURES

		B	C	M	E	MP	PP
705V001	Install flood lights			X	X		
705V002	Install incandescent lighting fixture dimmers			X	X		
705V003	Install fluorescent lighting fixture dimmers			X	X		
705V004	Install heat-a-vent lights				X		
705V005	Install light fixtures			X	X		
705V006	Install photo-electric controls on light			X	X		
705V007	Install post lights			X	X		
705V008	Install power failure lighting			X	X		
705V009	Install delayed lighting switches				X		
705V010	Install low-voltage lighting controls				X		
705V011	Install moisture resistant fixtures			X	X		
705V012	Install appliance pilot lights			X	X		
705V013	Install fan controlled by switch			X	X		
705V014	Install 110 volt light fixtures			X	X		
705V015	Select and install lighting control devices			X	X		
705V016	Connect incandescent lighting fixtures			X	X		
705V017	Connect fluorescent lighting fixtures			X	X		
705V018	Install single pole light circuits with 3-way switches			X	X		
705V019	Install single pole light circuits with 4-way switches			X	X		
705V020	Install remote control light circuits				X		

INSTALLING SERVICE ENTRANCE

		B	C	M	E	MP	PP
705W001	Ground service entrance equipment				X		
705W002	Install circuit breakers in panel				X		
705W003	Install main service panel				X		
705W004	Install mast-type service entrance				X		
705W005	Install main service disconnect				X		
705W006	Install mobile home service				X		
705W007	Install service entrance cable to service drop				X		
705W008	Install temporary service entrance				X		
705W009	Install underground service entrance				X		

INSTALLING SWITCH BOXES AND OUTLET BOXES

		B	C	M	E	MP	PP
705X001	Install bar-hanger mounted boxes				X		
705X002	Install flush mounted junction boxes				X		
705X003	Install flush mount switches and outlet boxes in drywall			X	X		
705X004	Install flush mount switches and outlet boxes in lath and plaster wall			X	X		
705X005	Install flush mount switches and outlet boxes in paneled wall			X	X		
705X006	Install flush mount switches and outlet boxes in masonry wall			X	X		
705X007	Install gangable boxes			X	X		
705X008	Install octagon outlet boxes			X	X		
705X009	Install receptacles and switches in existing wall			X	X		
705X010	Install recessed fixture housings in ceiling			X	X		
705X011	Install surface mount junction boxes			X	X		
705X012	Install underground, watertight, cast-iron boxes				X		

MAINTAINING EXISTING WIRING

		B	C	M	E	MP	PP
705Y001	Repair automatic control systems				X		
705Y002	Repair fire alarm stations (must be state licensed)				X		
705Y003	Repair fluorescent fixtures			X	X		
705Y004	Repair heating system controls				X		
705Y005	Repair lights			X	X		
705Y006	Repair relays and timers			X	X		
705Y007	Repair solenoids in door chimes			X	X		
705Y008	Repair water heaters			X	X		
705Y009	Repair emergency lighting systems			X	X		
705Y010	Repair frayed service cords			X	X		
705Y011	Repair power failure lighting systems			X	X		
705Y012	Replace existing interior load centers				X		
705Y013	Replace cables			X	X		
705Y014	Replace circuit breakers			X	X		
705Y015	Replace existing receptacles and switches			X	X		
705Y016	Replace float switches			X	X		
705Y017	Replace thermostats			X	X		
705Y018	Replace fuses			X	X		
705Y019	Replace grounding electrode conductors				X		
705Y020	Replace appliance pilot light bulbs			X	X		
705Y021	Replace service entrances				X		
705Y022	Replace transformers				X		
705Y023	Test circuits for correct voltage			X	X		

		B	C	M	E	MP	PP
705Y024	Troubleshoot branch circuits			X	X		
705Y025	Determine electrical problems using available troubleshooting techniques			X	X		
705Y026	Interpret control diagrams for electrical systems			X	X		
705Y027	Diagnose malfunctions of electrical systems using available test and measurement equipment			X	X		
705Y028	Measure and bend conduits			X	X		
705Y029	Pull conductors through existing structures			X	X		
705Y030	Test apparatus for operation			X	X		
705Y031	Adjust apparatus and devices to specifications			X	X		
705Y032	Test installations for mechanical integrities			X	X		
705Y033	Replace circuit breakers			X	X		
705Y034	Check for overloaded circuits			X	X		
705Y035	Wire parallel circuits			X	X		
705Y036	Wire series circuits			X	X		
705Y037	Wire series-parallel circuits			X	X		

ROUGHING IN FEEDERS, BRANCH CIRCUIT CABLES AND CIRCUITS

		B	C	M	E	MP	PP
705Z001	Rough in 120-volt circuits to distribution panel using non-metallic sheathed cable (N.M.C.)				X		
705Z002	Rough in 240-volt circuits to distribution panel using non-metallic sheathed cable (N.M.C.)				X		
705Z003	Rough in armored cables to outlet boxes				X		
705Z004	Rough in cables between existing boxes and new boxes				X		
705Z005	Rough in cables for branch circuits			X	X		
705Z006	Rough in conduits for branch circuits			X	X		
705Z007	Install devices controlled by two three-way switches with feed to switch box				X		
705Z008	Install devices controlled by two three-way switches with feed to light box				X		
705Z009	Install devices controlled by two three-way switches and one four-way switch with feed to three-way switch				X		
705Z010	Install device controlled by two three-way switches and one four-way switch with feed to light				X		
705Z011	Install device controlled by two three-way switches and two four-way switches with feed to three-way switch				X		
705Z012	Rough in circuit for door chime system			X	X		
705Z013	Rough in circuit for an intercom system			X	X		
705Z014	Rough in line-voltage thermostat wiring			X	X		
705Z015	Rough in low-voltage thermostat wiring			X	X		
705Z016	Rough in non-metallic cable in outlet boxes			X	X		
705Z017	Install pressure switches in existing well				X		
705Z018	Install receptacles with two three-way switches controlling one half of two receptacles			X	X		
705Z019	Install single pole switches controlling one or more devices with feed to switch box				X		
705Z020	Install single pole switches controlling one or more devices with feed to light/device box				X		
705Z021	Install single pole switches controlling three lights or devices with feed to end light box				X		
705Z022	Install split circuit duplex receptacles				X		

		B	C	M	E	MP	PP
705Z023	Install two three-way switches controlling one device using conduit and 4" square boxes with plaster rings-circuitry and boxes				X		
705Z024	Install underground circuits				X		
705Z025	Install underground direct burial cables				X		
705Z026	Make up branch circuit wires to panels				X		
705Z027	Rough in single pole switch circuits				X		
705Z028	Run feeder cable from main service panel to auxiliary panel				X		
705Z029	Make joints using crimp type connectors			X	X		
705Z030	Make pigtail splices			X	X		
705Z031	Make splices using mechanical-type connectors			X	X		
705Z032	Make fixture splices			X	X		

TRIMMING OUT ELECTRICAL DEVICES AND APPLIANCES

		B	C	M	E	MP	PP
705AA001	Install automatic garage door openers			X	X		
705AA002	Connect door chime systems			X	X		
705AA003	Connect duplex receptacles			X	X		
705AA004	Install electric fence chargers				X		
705AA005	Install emergency warning systems (burglar or fire - state license only)			X	X		
705AA006	Install three-wire 220 volt receptacles				X		
705AA007	Install four-wire 220 volt receptacles				X		
705AA008	Install ground fault interrupting devices				X		
705AA009	Install hot water heaters			X	X		
705AA010	Install humidity control devices				X		
705AA011	Connect intercom systems			X	X		
705AA012	Connect low-voltage lighting controls			X	X		
705AA013	Install photo-electric cell controls			X	X		
705AA014	Connect recessed fixture boxes in ceiling			X	X		
705AA015	Connect single pole switches			X	X		
705AA016	Install single pole switches with pilot light			X	X		
705AA017	Connect split circuit duplex receptacles			X	X		
705AA018	Install timer or delayed action switches			X	X		
705AA019	Connect water pump motors				X		
705AA020	Connect wires from junction boxes to appliances			X	X		
705AA021	Install three-way switches			X	X		
705AA022	Install four-way switches			X	X		
705AA023	Install surface raceways			X	X		
705AA024	Install water pump motors				X		
705AA025	Connect 120-volt circuits to distribution panel using non-metallic sheathed cable (N.M.C.)				X		
705AA026	Connect 240-volt circuits to distribution panel using non-metallic sheathed cable (N.M.C.)				X		

INSTALLING AND MAINTAINING MOTORS

		B	C	M	E	MP	PP
705AB001	Install split-phase motors			X	X		
705AB002	Maintain split-phase motors			X	X		
705AB003	Install capacitor start motors			X	X		
705AB004	Maintain capacitor start motors			X	X		
705AB005	Reverse the rotation of motors			X	X		
705AB006	Install motor controls			X	X		
705AB007	Maintain motor controls			X	X		

		B	C	M	E	MP	PP
705AB008	Change motors for running voltage			X	X		
705AB009	Replace blower motors			X	X		
705AB010	Replace furnace motors				X		
705AB011	Replace pump motors for well				X		
705AB012	Service electric motors				X		

USING CLIMBING EQUIPMENT

		B	C	M	E	MP	PP
705AC001	Inspect climbing equipment for safety	X	X	X	X	X	X
705AC002	Set up ladders	X	X	X	X	X	X
705AC003	Set up ladder jacks and planks	X	X	X		X	
705AC004	Construct outrigger scaffolds	X	X	X		X	
705AC005	Erect metal scaffolds	X	X	X		X	
705AC006	Construct hanging and swinging scaffolds	X	X	X		X	
705AC007	Erect suspended work platforms	X	X	X		X	
705AC008	Set up Bosun's chairs					X	
705AC009	Set up mobile and powered scaffolds	X	X	X		X	
705AC010	Construct single-pole scaffolds	X	X	X		X	
705AC011	Construct double-pole scaffolds	X	X	X		X	

PREPARING SURFACE FOR FINISHING

		B	C	M	E	MP	PP
705AD001	Prepare surfaces for painting			X		X	
705AD002	Prepare surfaces for papering			X		X	
705AD003	Prepare wood surfaces for finishing			X		X	
705AD004	Prepare concrete surfaces for finishing			X		X	
705AD005	Prepare metal surfaces for finishing			X		X	
705AD006	Prepare gypsum surfaces for finishing			X		X	
705AD007	Prepare plaster surfaces for finishing			X		X	

USING COMPRESSOR AND SPRAY EQUIPMENT

		B	C	M	E	MP	PP
705AE001	Lubricate compressors			X		X	
705AE002	Adjust air regulators			X		X	
705AE003	Select and use air and fluid hoses			X		X	
705AE004	Apply paint with conventional spray gun			X		X	
705AE005	Apply paint with airless spray gun			X		X	
705AE006	Select and use respirators			X		X	
705AE007	Clean spray equipment			X		X	

FINISHING SURFACES

		B	C	M	E	MP	PP
705AF001	Mix primer			X		X	
705AF002	Mix paint to desired color			X		X	
705AF003	Clean surfaces using paint removal tools and sandpaper			X		X	
705AF004	Fill holes and cracks			X		X	
705AF005	Apply primer to surface to be painted			X		X	
705AF006	Paint plaster or wall surfaces			X		X	
705AF007	Paint concrete surfaces			X		X	
705AF008	Paint metal surfaces			X		X	
705AF009	Seal uncoated wood surfaces			X		X	
705AF010	Paint uncoated wood surfaces			X		X	
705AF011	Stain uncoated wood surfaces			X		X	
705AF012	Apply varnish to wood surfaces			X		X	

		B	C	M	E	MP	PP
705AF013	Apply shellac to wood surfaces			X		X	
705AF014	Apply lacquer to wood surfaces			X		X	
705AF015	Clean area and equipment of finishing materials			X		X	

COVERING WALLS

		B	C	M	E	MP	PP
705AG001	Estimate amount of wallpaper needed			X		X	
705AG002	Cut wallpaper			X		X	
705AG003	Prepare wall surfaces for wallpaper			X		X	
705AG004	Apply wallpaper to walls			X		X	

MAINTAINING STRUCTURES

		B	C	M	E	MP	PP
705AH001	Inspect structures for soundness			X		X	
705AH002	Repair cracks			X		X	
705AH003	Repair alligatoring			X		X	
705AH004	Repair checking			X		X	
705AH005	Repair blistering			X		X	
705AH006	Repair peeling			X		X	
705AH007	Repair flaking			X		X	
705AH008	Remove mildew			X		X	
705AH009	Repair nail head stains			X		X	
705AH010	Repair peeling and flaking on metal gutters			X		X	
705AH011	Repair flaking and chaulking masonry			X		X	
705AH012	Apply protective wall coverings below grade			X		X	
705AH013	Repaint walls and ceilings			X		X	
705AH014	Remove and hang new wall coverings			X		X	
705AH015	Refinish woodwork			X		X	
705AH016	Refinish concrete			X		X	
705AH017	Refinish metal			X		X	

JOINING PIPE

		B	C	M	E	MP	PP
705AI001	Bend copper tubing with spring bender			X			X
705AI002	Braze pipes with gas torch and filler metal			X			X
705AI003	Join cast-iron pipes using lead and oakum						X
705AI004	Cut cast-iron soil pipes with snap-type chain cutter						X
705AI005	Cut concrete pipes						X
705AI006	Cut copper tubing and pipes with hacksaw			X			X
705AI007	Cut copper tubing and pipes with tubing cutter			X			X
705AI008	Cut steel pipes with 4-wheel pipe cutter			X			X
705AI009	Cut steel pipes with one-wheel cutter			X			X
705AI010	Join cast-iron pipes to clay pipe						X
705AI011	Join clay pipes with couplings						X
705AI012	Join copper tubing to brass pipes			X			X
705AI013	Join copper tubing/pipes to copper pipe/tubing			X			X
705AI014	Join copper tubing/pipes to plastic pipes, using sweat method			X			X
705AI015	Join copper tubing to steel pipes			X			X
705AI016	Join copper tubing with compressed connectors			X			X
705AI017	Join pipe with no-hub or band clamp couplings			X			X
705AI018	Join plastic pipes to cast-iron pipes with no-hub couplings			X			X
705AI019	Join plastic pipes using solvent cement method			X			X

		B	C	M	E	MP	PP
705AI020	Join plastic pipes to steel pipe			X			X
705AI021	Join steel pipes to cast-iron pipes with no-hub couplings						X
705AI022	Thread steel pipes with adjustable dies			X			X
705AI023	Thread steel pipes with non-adjustable dies			X			X
705AI024	Thread steel pipes with power-driven vise stands			X			X
705AI025	Join pipes with electric arc welders and filler metals			X			X
705AI026	Weld pipes with oxyacetylene torches and filler materials			X			X

INSTALLING HANGERS AND SUPPORTS

		B	C	M	E	MP	PP
705AJ001	Install pipe sleeves or thimbles through walls, floors or ceilings			X			X
705AJ002	Secure horizontal and vertical lines of pipe to masonry surfaces with hangers			X			X
705AJ003	Secure horizontal and vertical lines of pipe to metal surfaces with hangers			X			X
705AJ004	Secure horizontal and vertical lines of pipe to wood surfaces with hangers			X			X

BUILDING WATER DISTRIBUTION LINES

		B	C	M	E	MP	PP
705AK001	Install booster pumps in water supply lines						X
705AK002	Install cut-off valves			X			X
705AK003	Install cut-off valves in stop-and-waste box			X			X
705AK004	Install expansion joints			X			X
705AK005	Install hot or cold water storage tanks			X			X
705AK006	Repair make-up water components on water cooling towers						X
705AK007	Install pressure relief valves			X			X
705AK008	Install water circulating pumps			X			X
705AK009	Insulate water lines			X			X
705AK010	Make water pressure tests on water supply systems			X			X
705AK011	Rough-in water supply lines for bathtubs			X			X
705AK012	Rough-in water supply lines for wall-mounted urinals			X			X
705AK013	Rough-in water supply lines for water closets			X			X
705AK014	Rough-in water supply lines for water heaters			X			X
705AK015	Lay out trench lines						X

BUILDING DRAINS

		B	C	M	E	MP	PP
705AL001	Backfill trenches						X
705AL002	Calculate slope required for building sewer lines						X
705AL003	Install drain pipes in trenches						X
705AL004	Establish grade lines for installing plumbing						X
705AL005	Install cleanouts on drains			X			X
705AL006	Install float valves on water cooling towers						X
705AL007	Install overflow pipes on water cooling towers						X
705AL008	Install storm drains						X
705AL009	Lay out house drains						X
705AL010	Make water tests on building drains			X			X
705AL011	Rough-in waste lines and vents for bathtubs			X			X

		B	C	M	E	MP	PP
705AL012	Rough-in waste lines and vents for built-in lavatories			X			X
705AL013	Rough-in waste lines and vents for dishwashers			X			X
705AL014	Rough-in waste lines and vents for floor-mounted water closets			X			X
705AL015	Rough-in waste lines for shower baths			X			X
705AL016	Rough-in waste lines for wall-mounted urinals			X			X

INSTALLING TRAPS AND CLEANOUTS

		B	C	M	E	MP	PP
705AM001	Install acid-proof traps			X			X
705AM002	Install garbage disposal units			X			X
705AM003	Install grease interceptors in waste lines			X			X
705AM004	Install waste sinks for food-handling equipment			X			X

INSTALLING VENTS

		B	C	M	E	MP	PP
705AN001	Install soil or waste back vents			X			X
705AN002	Install vent terminals (roof-flashing)			X			X

INSTALLING FIXTURES

		B	C	M	E	MP	PP
705AO001	Install built-in lavatories			X			X
705AO002	Install dishwashers			X			X
705AO003	Install drinking fountains			X			X
705AO004	Install electric water heaters			X			X
705AO005	Install flush valve-type water closets			X			X
705AO006	Install gas water heaters			X			X
705AO007	Install washing machines			X			X
705AO008	Install shower bath accessories in ceramic tile baths			X			X
705AO009	Install tank-type water closets			X			X
705AO010	Install bathtubs			X			X
705AO011	Install wall-mounted lavatories			X			X
705AO012	Install wall-mounted urinals			X			X

INSTALLING/MAINTAINING HYDRONIC HEATING SYSTEMS

		B	C	M	E	MP	PP
705AP001	Install cast iron sectional boilers						X
705AP002	Install horizontal steel tube boilers						X
705AP003	Install expansion tanks			X			X
705AP004	Install finn tube radiation			X			X
705AP005	Install cast iron baseboard radiation			X			X
705AP006	Install circulating pumps			X			X
705AP007	Install header and "hartford loops"						X
705AP008	Select and install valves for heating system			X			X
705AP009	Install steam traps						X
705AP010	Replace relief valves			X			X
705AP011	Repair circulating pumps			X			X
705AP012	Troubleshoot control system for hot water boilers			X			X
705AP013	Troubleshoot control system for steam boilers			X			X
705AP014	Check for improper combustions			X			X
705AP015	Repair leak in radiant floor coil systems			X			X
705AP016	Clean and adjust gas burners			X			X

		B	C	M	E	MP	PP
705AP017	Check steam pressures for boiler malfunctions			X			X
705AP018	Clean deposits from boilers			X			X

MAINTAINING PLUMBING SYSTEMS

		B	C	M	E	MP	PP
705AQ001	Clear obstructions from lavatory drains			X			X
705AQ002	Remove obstructions from main drain lines			X			X
705AQ003	Remove obstructions from water closet drains			X			X
705AQ004	Replace lavatory trap drains			X			X
705AQ005	Repair leaking shower valves			X			X
705AQ006	Repair leaking water faucets or valves			X			X
705AQ007	Repair water flush valves on water closets			X			X
705AQ008	Clean steam pressure regulator valves			X			X
705AQ009	Install prefabricated air chambers						X
705AQ010	Replace pressure control switches on water pumps			X			X
705AQ011	Replace section of galvanized water supply lines			X			X
705AQ012	Inspect fuel tank liners			X			X
705AQ013	Replace fuel tank liners			X			X

MAINTAINING THE OUTSIDE ENVIRONMENT

		B	C	M	E	MP	PP
705AR001	Mow lawns			X			
705AR002	Prune trees and shrubs			X			
705AR003	Clean drives and walks of snow			X			
705AR004	Water lawns			X			
705AR005	Water inside plants			X			
705AR006	Seed lawns			X			
705AR007	Lay sod			X			
705AR008	Control tree and shrub diseases			X			
705AR009	Control tree and shrub insects			X			
705AR010	Control lawn diseases			X			
705AR011	Control lawn insects			X			
705AR012	Control lawn weeds			X			
705AR013	Plant trees and shrubs			X			
705AR014	Fertilize lawns			X			
705AR015	Rake and sweep lawns			X			
705AR016	Aerate lawns			X			

Education
For
Employment
Task Lists

Illinois
State Board of
Education

Adult
Vocational and
Technical Education

INDUSTRIAL OCCUPATIONS

1988

ELECTRONIC CLUSTER

Computer Repair Technician
Electrical and Electronic Technician
*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

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ELECTRONIC OCCUPATIONS CLUSTER MATRIX

CRT = Computer Repair Technician
EET = Electrical and Electronic Technician

APPLYING SAFETY PRACTICES

		CRT	EET
720A001	Apply basic emergency first aid techniques	X	X
720A002	Complete accident report	X	X
720A003	Inspect work area and equipment for safe working environment	X	X
720A004	Report shop, environmental and equipment safety violations	X	X
720A005	Demonstrate use of fire extinguishers	X	X
720A006	Plan shutdown procedure for given area	X	X
720A007	Participate in disaster control exercises	X	X
720A008	Prepare plan for disaster control exercises	X	X
720A009	Participate in shop safety committee	X	X
720A010	Organize shop safety committee	X	X
720A011	Correct safety hazards	X	X
720A012	Demonstrate cardiopulmonary resuscitation (CPR) techniques	X	X

ANALYZING DC CIRCUITS

		CRT	EET
720B001	Read and interpret color codes	X	X
720B002	Analyze, construct and troubleshoot series circuits	X	X
720B003	Analyze, construct and troubleshoot parallel circuits	X	X
720B004	Analyze, construct and troubleshoot series-parallel circuits	X	X
720B005	Analyze, construct and troubleshoot voltage dividers	X	X
720B006	Analyze, construct and verify maximum power theory	X	X
720B007	Analyze, construct and troubleshoot resistance x capacitance (RC) and resistance x inductance (RL) circuits	X	X

ANALYZING AC CIRCUITS

		CRT	EET
720C001	Set up and operate frequency counters and signal generators for AC circuits	X	X
720C002	Analyze, construct and troubleshoot AC capacitive circuits using a schematic	X	X
720C003	Analyze, construct and troubleshoot AC inductive circuits using a schematic	X	X
720C004	Analyze and apply principles of transformers to AC circuits using a schematic	X	X
720C005	Analyze, construct and troubleshoot resistor, capacitor and inductor (RCL) circuits using a schematic	X	X
720C006	Analyze, construct and troubleshoot series and parallel resonant circuits using a schematic	X	X
720C007	Analyze, construct and troubleshoot filter circuits using a schematic	X	X

ANALYZING SOLID STATE DEVICES

		CRT	EET
720D001	Analyze, construct and troubleshoot simple common base amplifiers using a schematic	X	X
720D002	Analyze, construct and troubleshoot simple common emitters using a schematic	X	X
720D003	Analyze, construct and troubleshoot simple common collectors using a schematic	X	X
720D004	Examine field effect transistor (FET) characteristics	X	X

		CRT	EET
720D005	Analyze, construct and troubleshoot simple common sources using a schematic	X	X
720D006	Analyze, construct and troubleshoot simple common drains using a schematic	X	X
720D007	Analyze, construct and troubleshoot simple common gains using a schematic	X	X
720D008	Analyze, construct and troubleshoot thyristors using a schematic	X	X
720D009	Analyze, construct and troubleshoot integrated circuit operational amplifiers using a schematic	X	X
720D010	Analyze, construct and troubleshoot optoelectronic devices using a schematic	X	X

ANALYZING ANALOG CIRCUITS

		CRT	EET
720E001	Analyze, construct and troubleshoot single-stage amplifiers using a schematic	X	X
720E002	Analyze, construct and troubleshoot multistage amplifiers using a schematic	X	X
720E003	Analyze, construct and troubleshoot basic power supplies, filters and regulators using a schematic	X	X
720E004	Analyze, construct and troubleshoot differential and operational amplifiers using a schematic	X	X
720E005	Analyze, construct and troubleshoot active filters using a schematic	X	X
720E006	Analyze, construct and troubleshoot oscillators using a schematic	X	X
720E007	Analyze, construct and troubleshoot basic pulse circuits using a schematic	X	X
720E008	Analyze, construct and troubleshoot basic modulation circuits using a schematic	X	X

ANALYZING DIGITAL ELECTRONIC CIRCUITS

		CRT	EET
720F001	Analyze and troubleshoot basic digital logic gate integrated circuits using a schematic	X	X
720F002	Verify basic Boolean expressions using basic logic gates	X	X
720F003	Analyze, construct and troubleshoot basic encoding and decoding circuits using a schematic	X	X
720F004	Analyze, construct and troubleshoot flip flops (memory) using a schematic	X	X
720F005	Analyze, construct and troubleshoot shift registers using a schematic	X	X
720F006	Analyze, construct and troubleshoot counters using a schematic	X	X
720F007	Analyze, construct and troubleshoot arithmetic circuits using a schematic	X	X
720F008	Analyze, construct and troubleshoot basic digital logic systems using a schematic	X	X

PERFORMING MICROPROCESSING OPERATIONS

		CRT	EET
720G001	Write, enter, verify and run simple machine language programs	X	X
720G002	Write, enter, verify and run machine language arithmetic programs	X	X
720G003	Write, enter, verify and run machine language branching programs	X	X
720G004	Perform basic programming using algorithms	X	X
720G005	Write, enter, verify and run machine language program using additional addressing modes	X	X
720G006	Perform basic programming using branching, algorithms and flow charting	X	X
720G007	Perform basic programming to demonstrate computer arithmetic	X	X
720G008	Prepare simple program to demonstrate operation of microprocessor unit (MPU) stack, subroutines, input/output (I/O) and interrupts	X	X
720G009	Prepare simple program to perform interface operations with random access memory (RAM) and display	X	X
720G010	Prepare simple program to perform interface operations with switches and light emitted diodes (LEO's)	X	X
720G011	Interface analog to digital converters to microprocessor	X	X
720G012	Interface digital to analog converters to microprocessor	X	X

PERFORMING LAB PRACTICES

		CRT	EET
720H001	Assemble printed circuit (PC) board	X	X
720H002	Solder wires to turret terminals and printed circuit (PC) boards	X	X
720H003	Assemble and solder printed circuit (PC) board	X	X
720H004	Repair printed circuit (PC) board	X	X
720H005	Set up and operate scales	X	X
720H006	Set up and operate mechanical and optical measuring devices	X	X
720H007	Set up and operate height gauges	X	X
720H008	Set up and operate depth gauges	X	X
720H009	Set up and operate oscilloscopes	X	X
720H010	Set up and operate multimeter and power supplies	X	X
720H011	Set up and operate capacitor inductor analyzers	X	X
720H012	Set up and operate semiconductor testers and curve tracers	X	X
720H013	Set up and operate chart recorder	X	X
720H014	Set up and use digital test equipment	X	X

RECORDING AND REPORTING TECHNICAL MATERIAL

		CRT	EET
720I001	Record data and design curves and graphs	X	X
720I002	Write reports	X	X
720I003	Make equipment failure reports	X	X
720I004	Specify and requisition simple electronic components	X	X
720I005	Write formal reports of laboratory experiences	X	X

USING TECHNICAL REFERENCES

		CRT	EET
720J001	Identify manufacturers of various electronic devices using numerical integrated circuit (IC) reference manuals	X	X
720J002	Identify specific characteristics of various electronic devices using manufacturers' reference manuals	X	X

		CRT	EET
720J003	Identify distributors of various electronic devices using reference manuals	X	X
720J004	Cross-reference various electronic devices between manufacturers using reference manuals	X	X
720J005	Determine maintenance procedures using manuals	X	X

MAINTAINING AND REPAIRING ELECTRICAL SYSTEMS

		CRT	EET
720K001	Replace faulty electrical cords and plugs	X	X
720K002	Determine electrical problems using available troubleshooting techniques	X	X
720K003	Interpret control diagrams for electrical systems	X	X
720K004	Diagnose malfunctions of electrical systems using available test and measurement equipment	X	X

MAINTAINING AND REPAIRING ELECTRONIC SYSTEMS

		CRT	EET
720L001	Determine electronic problems using available troubleshooting techniques	X	X
720L002	Interpret control diagrams for electronic systems	X	X
720L003	Diagnose malfunctions of electronic systems using available test and measurement equipment	X	X

CONDUCTING SHOP OPERATIONS

		CRT	EET
720M001	Answer customer questions	X	X
720M002	Troubleshoot customer problems	X	X
720M003	Determine repair method	X	X
720M004	Perform public relations activities	X	X
720M005	Demonstrate computer equipment functions at store	X	X
720M006	Demonstrate software functions	X	X
720M007	Prepare service bill	X	X
720M008	Maintain accounts receivable/paid records	X	X
720M009	Maintain receiving records	X	X
720M010	Maintain shipping records	X	X
720M011	Maintain records of service tools and equipment	X	X
720M012	Maintain computer equipment inventory	X	X
720M013	Maintain call record report	X	X
720M014	Update on-site maintenance log	X	X
720M015	Unpack and inspect new equipment	X	X
720M016	Receive and store parts and supplies	X	X
720M017	Discuss delivery schedule with approved supplier	X	X
720M018	Order parts and supplies	X	X
720M019	Establish customer and equipment history file	X	X
720M020	Establish customer files	X	X
720M021	Prepare items for shipping	X	X
720M022	Update service manuals	X	X
720M023	Update parts catalogs	X	X
720M024	Modify wiring diagrams to reflect repair changes	X	X

PERFORMING HOUSEKEEPING AND RECORDKEEPING

		CRT	EET
720N001	Clean and maintain work area and leave in safe condition	X	X
720N002	Follow tool crib procedures	X	X
720N003	Report problems to supervisor	X	X

		CRT	EET
720N004	Complete time cards	X	X
720N005	Complete job status reports	X	X
720N006	Make equipment failure reports	X	X
720N007	Use manuals to determine basic maintenance procedures	X	X
720N008	Participate in participation management program (Quality Circles)	X	X

PERFORMING SUPERVISORY FUNCTIONS

		CRT	EET
7200001	Determine availability of machines, supplies and materials	X	X
7200002	Requisition, schedule and distribute supplies and materials	X	X
7200003	Coordinate workers with work to be done	X	X
7200004	Schedule and control shop flow of jobs	X	X
7200005	Maintain files	X	X
7200006	Maintain service records	X	X
7200007	Maintain labor records	X	X
7200008	Explain work requirements	X	X
7200009	Write technical reports	X	X
7200010	Inventory supplies and equipment	X	X
7200011	Maintain charts, tables, graphs or status boards on work scheduled	X	X
7200012	Check job/time cards	X	X
7200013	Inspect shop equipment and arrange for maintenance and work	X	X
7200014	Coordinate maintenance and repair of shop equipment	X	X
7200015	Develop preventative maintenance program	X	X
7200016	Plan and implement technical training for employees	X	X
7200017	Train new service technicians	X	X
7200018	Evaluate employee progress and performance	X	X
7200019	Follow up employee reports of problems or equipment failures	X	X
7200020	Interview job applicants	X	X
7200021	Estimate cost of equipment installation	X	X
7200022	Estimate cost of system installation	X	X
7200023	Estimate cost of maintenance repairs and downtime	X	X
7200024	Conduct representative meetings	X	X

INSTALLING COMPUTER EQUIPMENT

		CRT	EET
720P001	Determine customer computing requirements	X	
720P002	Design computer system layout	X	
720P003	Transport computer equipment	X	
720P004	Set up computer equipment	X	
720P005	Perform computer installation tests	X	
720P006	Demonstrate usage of computer system on-site	X	
720P007	Complete warranty cards for computer equipment	X	
720P008	Construct cables for computer equipment	X	

EVALUATING COMPUTER DIAGNOSTICS

		CRT	EET
720Q001	Conduct motherboard random access memory (RAM) test	X	
720Q002	Conduct motherboard read only memory random access (ROM) test	X	
720Q003	Conduct programmers' aid test	X	
720Q004	Conduct computer keyboard test	X	
720Q005	Conduct computer paddle/button test	X	

	CRT	EET
720Q006 Conduct computer tape read/write/verify test	X	
720Q007 Conduct computer color bar test	X	
720Q008 Conduct computer graphic tablet test	X	
720Q009 Conduct basic/integer read only memory (ROM) card test	X	
720Q010 Conduct computer language card test	X	
720Q011 Conduct computer disk interface card test	X	
720Q012 Conduct computer printer card test	X	
720Q013 Conduct computer serial communication card test	X	
720Q014 Conduct computer monitor test	X	
720Q015 Conduct computer oscilloscope test	X	
720Q016 Conduct computer data communication line test	X	
720Q017 Interpret computer diagnostic flow charts	X	

MAINTAINING COMPUTER EQUIPMENT

	CRT	EET
720R001 Clean metallic computer parts	X	
720R002 Clean nonmetallic computer parts	X	
720R003 Clean electrical connections in computer	X	
720R004 Clean computer cable connections	X	
720R005 Clean printer head	X	
720R006 Clean computer disk drive head	X	
720R007 Clean and demagnetize computer tape head	X	
720R008 Lubricate metallic mechanical computer parts	X	
720R009 Lubricate nonmetallic mechanical computer parts	X	
720R010 Adjust mechanical computer assemblies	X	
720R011 Adjust and align computer disk drive head	X	
720R012 Adjust and align computer tape head	X	
720R013 Set computer disk read/write/verify speed	X	
720R014 Set computer tape read/write/verify speed	X	
720R015 Clean or replace computer filters	X	
720R016 Clean outside case/cover of computer	X	

SERVICING COMPUTER EQUIPMENT

	CRT	EET
720S001 Interpret computer troubleshooting charts	X	
720S002 Interpret chip-swapping charts	X	
720S003 Interpret computer schematics	X	
720S004 Interpret manufacturing upgrade	X	
720S005 Remove and install computer cover	X	
720S006 Install computer keyboard	X	
720S007 Install motherboard in computer	X	
720S008 Install power supply in computer	X	
720S009 Install analog board in computer	X	
720S010 Install disk drive assembly in computer	X	
720S011 Install main logic assembly in computer	X	
720S012 Install integrated circuit chips in computer	X	
720S013 Install power light in computer	X	
720S014 Install on-off switch in computer	X	
720S015 Install main printed circuit board in computer	X	
720S016 Install power supply printed circuit board in computer	X	
720S017 Install drive motor	X	
720S018 Install print hammer	X	
720S019 Install print mechanism	X	
720S020 Install carriage assembly	X	
720S021 Install paper feed assembly	X	

		CRT	EET
720S022	Install drive indicator light	X	
720S023	Install peripheral connection cables	X	
720S024	Install peripheral connections	X	
720S025	Install circuit/language cards	X	
720S026	Install modem coupler	X	
720S027	Install tape transport assembly	X	
720S028	Install read/write/verify head	X	
720S029	Install modem set switch	X	
720S030	Install ribbon assembly	X	
720S031	Install drive belts	X	
720S032	Install AC input connections	X	
720S033	Install fuse holders and fuses	X	
720S034	Install ejector mechanisms	X	
720S035	Install cathode ray tube	X	
720S036	Install configuration switches	X	
720S037	Install peripheral controls	X	
720S038	Install data communications adaptor	X	
720S039	Install expansion memory	X	
720S040	Install main memory	X	
720S041	Install field type product line	X	
720S042	Install remote terminals	X	
720S043	Install electrical wiring	X	
720S044	Install keys on keyboard	X	
720S045	Repair keyboard	X	
720S046	Repair motherboard	X	
720S047	Repair analog board	X	
720S048	Repair disk drive assembly	X	
720S049	Repair logic assembly	X	
720S050	Repair on-off switch	X	
720S051	Repair mechanical assembly	X	
720S052	Repair printed circuit board	X	
720S053	Repair drive motor	X	
720S054	Repair carriage assembly	X	
720S055	Repair paper feed assembly	X	
720S056	Repair circuit/language card	X	
720S057	Repair tape transport assembly	X	
720S058	Repair print mechanism	X	
720S059	Repair read/write/verify head	X	
720S060	Repair ribbon assembly	X	
720S061	Repair ejector mechanism	X	
720S062	Repair peripheral controls	X	
720S063	Repair data communications adaptor	X	
720S064	Repair expansion memory	X	
720S065	Repair memory	X	
720S066	Repair field type product line	X	
720S067	Repair remote terminals	X	
720S068	Identify integrated circuit chips	X	
720S069	Identify machine components and test points	X	
720S070	Set configuration switches	X	
720S071	Set user switches	X	
720S072	Install mechanical assembly	X	
720S073	Perform operator duties	X	

	CRT	EET
720S074 Realign read/write/verify head	X	
720S075 Adjust motor speed	X	
720S076 Check AC power source	X	
720S077 Repair power supply	X	

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

GRAPHIC COMMUNICATIONS CLUSTER

Commercial Artists
Compositors and/or Typesetters
Offset Lithographic Press Operators
Printing Photographers
Camera Operators
*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

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GRAPHIC COMMUNICATIONS OCCUPATIONS CLUSTER MATRIX

ART = Commercial Artists
CTS = Compositors and/or Typesetters
OLP = Offset Lithographic Press Operators
PHO = Photographers
CO = Printing Camera Operators

APPLYING SAFETY PRACTICES

		ART	CTS	OLP	PHO	CO
735A001	Comply with shop and equipment safety rules	X	X	X	X	X
735A002	Apply basic emergency first aid techniques	X	X	X	X	X
735A003	Complete accident report	X	X	X	X	X
735A004	Inspect work area and equipment for safe working environment	X	X	X	X	X
735A005	Report shop, environmental and equipment safety violations	X	X	X	X	X
735A006	Demonstrate use of fire extinguishers	X	X	X	X	X
735A007	Correct safety hazards	X	X	X	X	X
735A008	Demonstrate cardiopulmonary resuscitation (CPR) techniques	X	X	X	X	X
735A009	Participate in safety training program	X	X	X	X	X
735A010	Participate in disaster control exercises		X	X		X
735A011	Participate in shop safety committee		X	X	X	X
735A012	Comply with safety rules for working with photographic chemicals				X	X

PERFORMING HOUSEKEEPING AND RECORDKEEPING ACTIVITIES

		ART	CTS	OLP	PHO	CO
735B001	Clean and maintain work area and leave in safe condition	X	X	X	X	X
735B002	Report problems to supervisor	X	X	X	X	X
735B003	Maintain records	X	X		X	X
735B004	Coordinate work with other departments	X	X		X	X
735B005	Complete time cards	X	X	X	X	X
735B006	Complete job status reports	X	X	X	X	X
735B007	Calculate time and materials	X	X		X	X
735B008	Participate in participative management program (Quality Circles)	X	X	X	X	X
735B009	Make equipment failure reports		X	X	X	X
735B010	Determine basic maintenance procedures using manuals		X	X	X	X
735B011	Maintain log on film and chemical expiration dates		X			
735B012	Order ink, supplies and chemicals			X		
735B013	Store ink			X		
735B014	Store printing supplies			X		
735B015	Store printing chemicals			X		
735B016	Read and interpret specifications on job ticket				X	X
735B017	Requisition photographic supplies and materials				X	X
735B018	Order photographic supplies and materials				X	X
735B019	Store photographic supplies				X	X
735B020	Store photographic chemicals				X	X

CONDUCTING SHOP OPERATIONS

		ART	CTS	OLP	PHO	CO
735C001	Answer customer questions	X			X	
735C002	Troubleshoot customer problems	X			X	
735C003	Requisition art supplies and materials	X				
735C004	Order art supplies and materials	X				

		ART	CTS	OLP	PHO	CO
735C005	Store art supplies	X				
735C006	Inventory supplies	X				
735C007	Guide and direct the work of graphic design team	X				
735C008	Prepare estimates and bids on graphic arts jobs	X				
735C009	Negotiate art and production work with prospective clients	X				
735C010	Complete graphic art assignment contract	X				
735C011	Complete expense record	X			X	
735C012	Establish and maintain appointment/assignment book	X			X	
735C013	Complete customer billing for commercial assignment	X			X	
735C014	Maintain art reference files	X				
735C015	File completed customer orders and negatives	X			X	
735C016	Interpret and apply copyright laws	X			X	
735C017	Complete business license application	X			X	
735C018	Set up a studio	X				
735C019	Evaluate design team work	X				
735C020	Control design efforts to meet job requirements and limits	X				
735C021	Withhold release of inadequate design	X				
735C022	Present client with alternative designs	X				
735C023	Prepare portfolio of artwork	X				
735C024	Maintain presentational portfolio	X				
735C025	Display artwork	X				
735C026	Order prints from lab	X			X	
735C027	Determine production volume and select production processes	X				
735C028	Plan and schedule work assignments	X				
735C029	Give directions to printers	X				
735C030	Give directions to photographer	X				
735C031	Communicate with free lancers	X				
735C032	Communicate with department heads	X				
735C033	Communicate with media personnel	X				
735C034	Advertise services	X			X	
735C035	Plan work areas	X				
735C036	Maintain work areas	X				
735C037	Maintain equipment inventory				X	
735C038	Guide and direct the work of photography team				X	
735C039	Prepare estimates and bids on photographic jobs				X	
735C040	Complete photography assignment contract				X	
735C041	Complete photograph release form				X	
735C042	Arrange photography session				X	
735C043	Set up a photography studio				X	
735C044	Set up a darkroom				X	
735C045	Purchase photographic equipment				X	
735C046	Purchase photographic supplies				X	
735C047	Evaluate photographic work				X	
735C048	Prepare portfolio of photographic work				X	
735C049	Assemble and exhibit proofbook				X	
735C050	Display photographic work				X	
735C051	Store and transport cameras and accessories				X	

PRODUCING COMPREHENSIVE LAYOUTS

		ART	CTS	OLP	PHO	CO
735D001	Establish visual directions and specifications for layout	X				
735D002	Make thumbnails of layout	X				
735D003	Design rough layouts	X				
735D004	Select mediums for comprehensive layouts	X				
735D005	Select type styles and illustration styles for layouts	X				
735D006	Design artwork and placement of elements in layouts	X				
735D007	Mark color or colors to be used for layouts	X				
735D008	Mark percentage of enlargements or reductions required on photographs	X				
735D009	Letter layouts and designs	X				
735D010	Make dummy layout of multipage printed product for signature specifications	X				
735D011	Produce rough layouts	X				
735D012	Mark copy for typesetting	X				
735D013	Prepare layout for presentation	X				
735D014	Prepare comprehensive layouts	X				
735D015	Revise layout to customer specifications	X				

ANALYZING AND DEFINING DESIGN PROBLEMS

		ART	CTS	OLP	PHO	CO
735E001	Interpret and define basic design function	X				
735E002	Specify physical requirements and limits of design	X				
735E003	Interpret design requirements of client	X				
735E004	Analyze focal point of specific public group	X				
735E005	Explore and collect ideas and definitions of design problem from design team	X				
735E006	Determine nature of distractions from design	X				

APPLYING AND ANALYZING COLOR

		ART	CTS	OLP	PHO	CO
735F001	Select and prepare color media	X				
735F002	Select and apply color to emphasize central theme	X				
735F003	Select and apply color to create visual focal image	X				
735F004	Select and apply color to distort or create illusion	X				
735F005	Select and apply color to make minor points	X				
735F006	Select and apply color to create image of character	X				
735F007	Select and apply color to create image to further purpose of client	X				
735F008	Select and apply color to create depth	X				
735F009	Select and apply color to create physical impression	X				
735F010	Select and apply color to take advantage of tradition and convention	X				
735F011	Select and apply color to arouse basic emotion	X				
735F012	Select and apply color to arrest attention	X				

COMPOSING ARTWORK

		ART	CTS	OLP	PHO	CO
735G001	Compose artwork in terms of normal eye movement	X				
735G002	Compose artwork to direct attention to key message	X				
735G003	Compose artwork to use the unusual as eye-catching visual focus	X				
735G004	Compose artwork to maintain clarity of theme	X				
735G005	Compose artwork to perceive and isolate a theme	X				

		ART	CTS	OLP	PHO	CO
735G006	Compose artwork to develop a central theme	X				
735G007	Compose artwork to create visual impact	X				
735G008	Compose artwork to create an illusion	X				

APPLYING DRAWING SKILLS

		ART	CTS	OLP	PHO	CO
735H001	Produce scratchboard illustrations	X				
735H002	Sketch and rough out ideas and design	X				
735H003	Illustrate scenes with line techniques	X				
735H004	Illustrate scenes with pen and ink	X				
735H005	Illustrate scenes with brush and wash	X				
735H006	Illustrate scenes with one-point perspective	X				
735H007	Illustrate scenes with two-point perspective	X				
735H008	Illustrate scenes with three-point perspective	X				
735H009	Illustrate scenes with three-dimensional shapes	X				
735H010	Illustrate scenes depicting light and its effects	X				
735H011	Illustrate scenes with shading techniques	X				
735H012	Illustrate scenes with still life objects	X				
735H013	Illustrate scenes with buildings	X				
735H014	Draw architectural illustrations	X				
735H015	Produce house exterior illustrations	X				
735H016	Produce house interior illustrations	X				
735H017	Illustrate scenes with furniture	X				
735H018	Produce schematic diagrams of equipment	X				
735H019	Illustrate scenes with fashion figures	X				
735H020	Illustrate scenes with heads and faces	X				
735H021	Illustrate scenes with caricatures	X				
735H022	Illustrate scenes with animals	X				
735H023	Illustrate scenes with wildlife	X				
735H024	Illustrate scenes with landscapes	X				
735H025	Prepare color separation drawings	X				
735H026	Prepare and maintain drawing tools and equipment	X				
735H027	Establish accurate size and proportions in artwork	X				
735H028	Adapt drawings to desired ideas, mood or effect	X				
735H029	Stylize drawings through distortion and use of effects	X				
735H030	Draw final artwork	X				
735H031	Select and purchase final artwork	X				
735H032	Determine final art style	X				

APPLYING LETTERING SKILLS

		ART	CTS	OLP	PHO	CO
735I001	Select lettering style and type for job	X				
735I002	Letter layouts and designs using transfer lettering	X				
735I003	Letter layouts and designs with speedball pen	X				
735I004	Letter layouts and designs with a brush	X				
735I005	Letter layouts and designs mechanically	X				
735I006	Letter layouts and designs with pen and ink	X				
735I007	Letter artwork using drop shading techniques	X				
735I008	Letter artwork using striping techniques	X				
735I009	Letter artwork freehand	X				
735I010	Layout lettering for illustrations	X				
735I011	Produce lettering for illustrations	X				
735I012	Hand letter, balance and proportion basic letter forms	X				
735I013	Analyze letter traditions and trends and select best design for desired effect	X				

		ART	CTS	OLP	PHO	CO
735I014	Design new letter forms	X				
735I015	Draw final hand lettering for artwork	X				
735I016	Select and purchase final hand lettering for artwork	X				

PRODUCING AIRBRUSHED ARTWORK

		ART	CTS	OLP	PHO	CO
735J001	Select and mix airbrush paints	X				
735J002	Prepare and maintain airbrush equipment	X				
735J003	Render artwork with airbrush	X				
735J004	Render drawings using airbrush techniques	X				

PRODUCING CARTOONS

		ART	CTS	OLP	PHO	CO
735K001	Sketch rough storyboard	X				
735K002	Draw cartoon characters	X				
735K003	Animate drawings	X				

CREATING FUNCTIONAL DESIGNS

		ART	CTS	OLP	PHO	CO
735L001	Render designs and define sizes, materials and limitations	X				
735L002	Analyze and base design on standardized materials	X				
735L003	Analyze and base design on natural materials	X				
735L004	Construct three-dimensional models	X				
735L005	Determine cost, size, function and other product criteria limits	X				
735L006	Design displays	X				
735L007	Design functional packaging	X				
735L008	Produce design to meet psychological needs	X				
735L009	Produce design to meet needs for comfort and convenience	X				
735L010	Produce designs that maintain realistic balance between functional and creative design	X				
735L011	Experiment with materials to determine qualities and design limitations	X				
735L012	Design brochures	X				
735L013	Design pamphlets	X				
735L014	Design a logo	X				
735L015	Design magazine ads	X				
735L016	Research specifications for ads in various media	X				
735L017	Produce prints using commercial materials	X				
735L018	Prepare artwork for transparencies or slides	X				
735L019	Produce graphics for letterpress process	X				
735L020	Produce graphics for offset process	X				
735L021	Produce graphics for silk-screen process	X				
735L022	Produce signs on posterboard	X				
735L023	Prepare charts	X				
735L024	Prepare graphs	X				
735L025	Prepare graphic illustrations for television	X				
735L026	Prepare fashion illustrations	X				
735L027	Prepare arts for newspapers	X				
735L028	Prepare arts for posters	X				
735L029	Prepare arts for collaterals	X				
735L030	Prepare arts for specialty advertising	X				
735L031	Prepare arts for signages	X				

		ART	CTS	OLP	PHO	CO
735L032	Prepare arts for audiovisuals	X				
735L033	Prepare arts for points of purchase	X				
735L034	Prepare arts for outdoor advertisements	X				
735L035	Prepare other functional designs	X				

APPLYING GRAPHIC ARTS PHOTOGRAPHY

		ART	CTS	OLP	PHO	CO
735M001	Use photo mechanical transfer paper negative	X				
735M002	Produce photomechanical transfer paper positive	X				
735M003	Produce photomechanical transfer film positive	X				
735M004	Produce photomechanical transfer and film negatives	X				
735M005	Produce photomechanical transfer halftone	X				
735M006	Retouch photographs	X				
735M007	Select locations for photography session	X				
735M008	Select models for photography session	X				
735M009	Select props for photography session	X				
735M010	Give directions to models	X				
735M011	Evaluate the use of photography in graphic design	X				
735M012	Combine photographs and artwork	X				
735M013	Crop photographs	X				
735M014	Consult with photographer	X				
735M015	Incorporate photographs in artwork	X				
735M016	Expose photographs using contact halftone screens	X				
735M017	Make line enlargements/reductions using graphic arts camera and processor	X				
735M018	Retouch existing black and white photographs	X				
735M019	Proof camera-ready copy for photo reproduction quality	X				

PREPARING MECHANICALS

		ART	CTS	OLP	PHO	CO
735N001	Add registration and trim marks	X				
735N002	Apply border tapes	X				
735N003	Apply dry-transfer letters	X				
735N004	Apply dry-transfer screen tints and shading film	X				
735N005	Attach artwork to mechanical	X				
735N006	Crop and size photographs	X				
735N007	Cut outlines of artwork in masking film	X				
735N008	Cut panels for halftones and reverses	X				
735N009	Draw reference and centering lines on masking sheets	X				
735N010	Draw up base sheet for final paste up	X				
735N011	Locate and paste up clip art	X				
735N012	Prepare tissue overlays	X				
735N013	Opaque photostat imperfections	X				
735N014	Paste up type matter in position on base sheet (flat)	X				
735N015	Position and secure protective tissue	X				
735N016	Position and secure overlays	X				
735N017	Proof all proportions and sizes with job specifications	X				
735N018	Proof mechanical flat against copy and dummy layout	X				
735N019	Select typeface for design effect desired	X				
735N020	Crop up board for reproduction	X				
735N021	Add bleed to a keyline	X				
735N022	Read guide photos and bleed panels	X				
735N023	Put register marks on board and overlay	X				
735N024	Crop, size and key photos	X				
735N025	Flap and tissue keyline art	X				

		ART	CTS	OLP	PHO	CO
735N026	Lay out and paste up for four-color separation	X				
735N027	Prepare mechanical for stationary items	X				
735N028	Prepare mechanical for one-color calendar	X				
735N029	Prepare mechanical for one-color grocery paste-up	X				
735N030	Prepare mechanical for one-color ruled forms	X				
735N031	Prepare mechanical for newsletter with stripping corrections	X				
735N032	Prepare mechanical for postal mailer using overlays	X				
735N033	Prepare mechanical for catalog pages	X				
735N034	Prepare mechanical using keyline techniques	X				
735N035	Prepare mechanical using transfer letters and tint overlays	X				
735N036	Prepare mechanical to achieve multiple color effects	X				
735N037	Perform photocropping and scaling techniques	X				
735N038	Prepare mechanical for a process color brochure	X				
735N039	Prepare other mechanicals	X				
735N040	Mark up copy for typesetting	X				

REPRODUCING ARTWORK

		ART	CTS	OLP	PHO	CO
735O001	Reproduce photographs	X				
735O002	Reproduce artwork using copy machines	X				
735O003	Reproduce artwork using thermofax machines	X				
735O004	Reproduce artwork using diazo machines	X				
735O005	Reproduce artwork using other processes	X				

MARKING COPY

		ART	CTS	OLP	PHO	CO
735P001	Read job order to determine composition information		X			
735P002	Mark up copy		X			
735P003	Measure type size		X			
735P004	Measure leading		X			
735P005	Measure line length		X			
735P006	Measure tabular column length and indents		X			
735P007	Measure horizontal and vertical rules		X			
735P008	Determine location of graphics		X			
735P009	Select type font, size and leading for job		X			

PROGRAMMING AND SETTING UP COMPOSING MACHINES

		ART	CTS	OLP	PHO	CO
735Q001	Set composing machine margins, leadings and tabs		X			
735Q002	Set composing machine impression		X			
735Q003	Set composing machine justification		X			
735Q004	Select and change ribbon in composing machine		X			
735Q005	Adjust parameters throughout job on composing machine		X			
735Q006	Set newspaper and newsletter copy on composing machine		X			
735Q007	Set invoice, application, billing and other forms on composing machine		X			
735Q008	Set display advertising copy on composing machine		X			
735Q009	Set letterhead, envelope, business card copy, books, manuals, reports, brochures, circulars or flyers on composing machine		X			
735Q010	Set lists, indexes and tables on composing machine		X			
735Q011	Adjust composing machine copy		X			
735Q012	Insert paper in composing machine		X			

		ART	CTS	OLP	PHO	CO
735Q013	Verify set up of composing machine		X			
735Q014	Adjust composing machine		X			
735Q015	Proofread composing machine copy		X			
735Q016	Produce phototypeset hard copy reader proof		X			
735Q017	Submit phototypeset output for proofreading		X			
735Q018	Read proofreader's marks and make indicated corrections in composing machine copy		X			
735Q019	Read editor's marks and make indicated corrections in composing machine copy		X			
735Q020	Correct grammar and spelling in composing machine copy		X			
735Q021	Correct typographical errors in composing machine copy		X			
735Q022	Fit text and graphics to layout in composing machine		X			
735Q023	Inspect and adjust composing machine copy for density		X			
735Q024	Inspect and adjust composing machine copy for alignment		X			
735Q025	Inspect and adjust composing machine copy for leading and margins		X			
735Q026	Inspect and adjust composing machine copy for type styles, family and size		X			
735Q027	Produce final composing machine typeset		X			

PROGRAMMING AND SETTING UP PHOTOTYPESETTING, DIGITAL AND DESKTOP PUBLISHING EQUIPMENT

		ART	CTS	OLP	PHO	CO
735R001	Enter layout specifications on typesetting or desktop publishing equipment		X			
735R002	Write formats for typesetting or desktop publishing equipment		X			
735R003	Receive off line data		X			
735R004	Receive telecommunication data		X			
735R005	Check system error report/documentation		X			
735R006	Determine if hardware/software problem		X			
735R007	Correct coding		X			
735R008	Determine and set margins, leadings and tabs		X			
735R009	Determine and set light density on phototypesetting equipment		X			
735R010	Set justification on phototypesetting equipment		X			
735R011	Adjust parameters throughout job on typesetting or desktop publishing equipment		X			
735R012	Keyboard newspaper and newsletter copy on typesetting or desktop publishing equipment		X			
735R013	Keyboard invoice, application, billing and other forms on typesetting or desktop publishing equipment		X			
735R014	Keyboard display advertising copy on typesetting or desktop publishing equipment		X			
735R015	Keyboard letterhead, envelope, business card copy, books, manuals, reports, brochures, circulars or flyers on typesetting or desktop publishing equipment		X			
735R016	Keyboard lists, indexes and tables on typesetting or desktop publishing equipment		X			
735R017	Enter keyboarded copy into memory		X			
735R018	Enter keyboarded copy into photo unit		X			
735R019	Enter formats for page pagination on typesetting or desktop publishing equipment		X			
735R020	Load fonts into output devices		X			
735R021	Load typesetter with film or paper		X			

		ART	CTS	OLP	PHO	CO
735R022	Proofread typeset copy on screen		X			
735R023	Produce phototypeset soft copy reader proof		X			
735R024	Produce typeset hard copy reader proof		X			
735R025	Submit typeset output for proofreading		X			
735R026	Read proofreader's marks and make indicated corrections in typeset copy		X			
735R027	Read editor's marks and make indicated corrections in typeset copy		X			
735R028	Correct grammar and spelling in typeset copy		X			
735R029	Correct typeset typographical errors		X			
735R030	Fit text and graphics to layout in phototypeset copy		X			
735R031	Inspect and adjust phototypeset copy for density		X			
735R032	Inspect and adjust phototypeset copy for alignment		X			
735R033	Inspect and adjust typeset copy for leading and margins		X			
735R034	Inspect and adjust typeset copy for type styles, family and size		X			
735R035	Update job file		X			
735R036	Produce final typeset copy		X			
735R037	Archive job file		X			
735R038	Merge text and graphics using software applications packages		X			
735R039	Complete a global search and edit or replace words and/or text		X			
735R040	Create structured graphics, flowcharts, diagrams, graphs, technical drawings or charts		X			
735R041	Input text and graphics using optical scanners		X			
735R042	Open, move, resize and close a window		X			
735R043	Back up the system		X			

DEVELOPING PHOTOTYPESETTING FILM

		ART	CTS	OLP	PHO	CO
735S001	Select and mix developing chemicals		X			
735S002	Fill processor with chemicals		X			
735S003	Transfer film to processor		X			
735S004	Develop film using processor		X			
735S005	Dry film		X			
735S006	Match dried film to original copy		X			
735S007	Identify and adjust film density problems		X			

MAINTAINING ELECTRONIC JOB FILES

		ART	CTS	OLP	PHO	CO
735T001	Save files on disk		X			
735T002	Retrieve files from disk		X			
735T003	Delete unneeded files from disk storage		X			
735T004	Transfer files from damaged disk to new disk		X			
735T005	Store disks		X			
735T006	Update disk log		X			
735T007	Update font information		X			
735T008	Update front end programs (software programs)		X			

PERFORMING BASIC MAINTENANCE ON TYPESETTING EQUIPMENT

		ART	CTS	OLP	PHO	CO
735U001	Adjust screen intensity and brightness		X			
735U002	Clean photo unit type fonts		X			
735U003	Clean keyboard		X			

		ART	CTS	OLP	PHO	CO
735U004	Clean photo unit dust filters		X			
735U005	Clean photo unit lens filters, lenses and mirrors		X			
735U006	Empty chemicals in processor		X			
735U007	Clean processor		X			
735U008	Clean exterior of keyboard, photo and processor unit		X			
735U009	Replace lamp bulbs in photo unit		X			
735U010	Perform basic maintenance on processor		X			
735U011	Perform basic maintenance on photo unit		X			
735U012	Perform basic maintenance on terminal and keyboard		X			
735U013	Arrange for repairperson to make call or schedule repairs		X			
735U014	Perform basic maintenance on composing machines		X			

PERFORMING PRESSWORK

		ART	CTS	OLP	PHO	CO
735V001	Read job orders to determine printing information			X		
735V002	Lubricate presses			X		
735V003	Inspect and pack impression cylinder			X		
735V004	Adjust vacuum, air blow and impression pressure on press			X		
735V005	Inspect and adjust buckle			X		
735V006	Inspect and pack plate cylinder			X		
735V007	Inspect and set dampening rollers			X		
735V008	Inspect and set ink rollers			X		
735V009	Estimate quantity of stock for job			X		
735V010	Select stock for job			X		
735V011	Determine press size for job			X		
735V012	Determine color of ink for job			X		
735V013	Estimate quantity of ink for job			X		
735V014	Mix ink			X		
735V015	Add ink to press ink fountain			X		
735V016	Meter ink to press rollers			X		
735V017	Mix fountain solutions			X		
735V018	Add fountain solution to water fountain tray			X		
735V019	Add fountain solution to bottle			X		
735V020	Add bottle to fountain			X		
735V021	Meter fountain solution to rollers or dampers			X		
735V022	Adjust one-color facilities on presses			X		
735V023	Adjust two-color facilities on presses			X		
735V024	Adjust perfecting qualities on presses			X		
735V025	Install plates on presses			X		
735V026	Set feed system			X		
735V027	Load stock in feed system			X		
735V028	Set delivery systems			X		
735V029	Ink press			X		
735V030	Set dampening systems			X		
735V031	Print test sheets			X		
735V032	Check position of image on stock			X		
735V033	Adjust presses			X		
735V034	Run trial sheets			X		
735V035	Check the register of the image on stock			X		
735V036	Check and adjust balance of ink/water			X		
735V037	Run trial stock to obtain desired ink density			X		
735V038	Set counter			X		
735V039	Clean and wipe off blanket			X		

		ART	CTS	OLP	PHO	CO
735V040	Wipe plate with fountain solution			X		
735V041	Run trial stock to obtain desired density and fidelity			X		
735V042	Adjust press to desired density and fidelity			X		
735V043	Adjust speed of sheet fed presses			X		
735V044	Adjust paper and size limitations of presses			X		
735V045	Adjust printing size limitations of presses			X		
735V046	Adjust printing quality of presses			X		
735V047	Remove test stock and reset counter			X		
735V048	Load paper			X		
735V049	Run one-color job			X		
735V050	Run two-color job			X		
735V051	Run multi-color job			X		
735V052	Run job on specialty stock			X		
735V053	Inspect quality of copy while running job			X		
735V054	Add ink as needed			X		
735V055	Add fountain solution as needed			X		
735V056	Inspect and adjust press during run			X		
735V057	Troubleshoot press during run			X		
735V058	Turn off stock feed and raise rollers off plate			X		
735V059	Remove stock			X		
735V060	Remove copy			X		

CLEANING PRESSES

		ART	CTS	OLP	PHO	CO
735W001	Clean blanket on press			X		
735W002	Wash plate			X		
735W003	Apply gum to plate and dry plate			X		
735W004	Return plate to plate file			X		
735W005	Wash blanket on press			X		
735W006	Remove ink from ink fountain			X		
735W007	Remove fountain solution from fountain			X		
735W008	Remove ink fountain from press			X		
735W009	Remove water fountain from press			X		
735W010	Clean ink fountain			X		
735W011	Clean out water fountain			X		
735W012	Take pressure off rollers			X		
735W013	Clean ink off rollers			X		
735W014	Wipe down rollers and edges			X		
735W015	Install clean ink fountain on press			X		
735W016	Install clean water fountain on press			X		
735W017	Wipe down press to remove ink and water			X		
735W018	Change blanket on press			X		
735W019	Clean impression cylinder			X		
735W020	Remove and clean rollers			X		
735W021	Remove glaze from rollers			X		
735W022	Desensitize rollers and blanket			X		
735W023	Replace rollers			X		
735W024	Adjust rollers			X		
735W025	Fill solvent containers			X		
735W026	Clean press air filters			X		
735W027	Perform basic press maintenance			X		

PERFORMING CAMERA WORK

		ART	CTS	OLP	PHO	CO
735X001	Read job order to determine photographic information				X	X
735X002	Select camera and film for job				X	X
735X003	Select camera lenses for a job				X	
735X004	Select camera accessories for a job				X	
735X005	Select and use tripods				X	
735X006	Select and use filters				X	
735X007	Calculate aperture and set F-stop				X	
735X008	Calculate and set shutter speeds				X	
735X009	Calculate time and set timer				X	X
735X010	Expose film using 35mm camera				X	
735X011	Expose film using view camera				X	
735X012	Expose film using medium format camera				X	
735X013	Expose film using twin lens reflex camera				X	
735X014	Expose film using aerial camera				X	
735X015	Expose film using special cameras				X	
735X016	Expose instant film using film pack holder				X	
735X017	Expose film using computer-assisted cameras				X	
735X018	Load camera					X
735X019	Scale and mark copy for reproduction sizes					X
735X020	Set percentage scales on process camera					X
735X021	Set exposure lamps					X
735X022	Select and install lens filters					X
735X023	Calculate and set F-stop					X
735X024	Position copy on copy board					X
735X025	Determine and set main flash exposures					X
735X026	Determine and set bump flash exposures					X
735X027	Make basic exposure test for line copy					X
735X028	Make basic exposure test for main exposure					X
735X029	Make basic exposure test for flash exposure					X
735X030	Determine exposures					X
735X031	Calculate main and flash exposure for continuous tone copy					X
735X032	Calculate filtration exposure					X
735X033	Sort and mark line copy					X
735X034	Sort and mark halftone copy					X
735X035	Produce line negatives					X
735X036	Produce line positives					X
735X037	Produce halftone negatives					X
735X038	Produce halftone positives					X
735X039	Produce four-color negatives					X
735X040	Produce four-color positives					X
735X041	Make contact frame exposures					X
735X042	Produce color separations					X
735X043	Produce reductions					X
735X044	Produce enlargements					X

DETERMINING AND SETTING UP LIGHTING

		ART	CTS	OLP	PHO	CO
735Y001	Determine light readings using exposure meters				X	
735Y002	Determine light readings using grey cards				X	
735Y003	Determine light readings using light meters				X	
735Y004	Determine strobe light readings using flash meters				X	
735Y005	Determine light reading for product with generated light source				X	

		ART	CTS	OLP	PHO	CO
735Y006	Calculate the need for additional lights				X	
735Y007	Set up supplementary lights				X	
735Y008	Select, set up and use reflectors				X	
735Y009	Set up lighting for outdoor available light				X	
735Y010	Set up lighting for outdoor artificial light				X	
735Y011	Set up combination available and artificial light				X	
735Y012	Set up lighting for studio portrait				X	
735Y013	Set up high key portrait lighting in studio				X	
735Y014	Set up lighting for tabletop objects				X	
735Y015	Set up lighting for large objects in studio				X	
735Y016	Set up lighting for large objects on location				X	
735Y017	Set up lighting for copy stand				X	
735Y018	Set up lighting for rear/front view projection				X	
735Y019	Calculate main and flash exposure				X	
735Y020	Calculate filtration exposure				X	
735Y021	Make basic exposure test				X	

PHOTOGRAPHING SUBJECTS

		ART	CTS	OLP	PHO	CO
735Z001	Select locations for photography session				X	
735Z002	Select models for photography session				X	
735Z003	Select props for photography session				X	
735Z004	Give directions to models				X	
735Z005	Pose and relax people				X	
735Z006	Photograph individual in studio				X	
735Z007	Photograph individual on location				X	
735Z008	Photograph group in studio				X	
735Z009	Photograph group on location				X	
735Z010	Photograph individual for passport/alien resident picture				X	
735Z011	Photograph weddings				X	
735Z012	Photograph tabletop objects				X	
735Z013	Photograph large objects in studio				X	
735Z014	Photograph large objects on location				X	
735Z015	Photograph interiors				X	
735Z016	Photograph exteriors				X	
735Z017	Photograph food				X	
735Z018	Photograph fashion items in studio				X	
735Z019	Photograph fashion items on location				X	
735Z020	Photograph objects using macro lens				X	
735Z021	Take photograph for environmental impact documentation				X	
735Z022	Take photograph for equipment/hardware documentation				X	
735Z023	Take aerial photographs				X	
735Z024	Photograph commercial products				X	
735Z025	Photograph merchandise				X	
735Z026	Photograph press conference				X	
735Z027	Photograph news events				X	
735Z028	Photograph feature stories				X	
735Z029	Photograph sports events				X	
735Z030	Take photographs using multiple exposure techniques				X	
735Z031	Solve photographic problems				X	

PERFORMING DARKROOM WORK

		ART	CTS	OLP	PHO	CO
735AA001	Prepare darkroom and arrange equipment				X	X
735AA002	Mix photographic chemicals				X	X
735AA003	Process black and white film using daylight tank				X	
735AA004	Process black and white film using automatic processor				X	
735AA005	Process black and white film using trays				X	
735AA006	Process color negative film using daylight tank				X	
735AA007	Process color negative film using automatic processor				X	
735AA008	Process color negative film using trays				X	
735AA009	Process color transparency film using daylight tank				X	
735AA010	Process color transparency film using automatic processor				X	
735AA011	Duplicate slides				X	
735AA012	Produce special effects title slides				X	
735AA013	Produce multi-image graphic slides				X	
735AA014	Retouch black and white negative				X	
735AA015	Process control strip in automatic processor				X	
735AA016	Monitor silver recovery unit				X	
735AA017	Recover photographic silver				X	
735AA018	Load film canisters				X	X
735AA019	Solve darkroom problems				X	
735AA020	Measure optical density of copy					X
735AA021	Process film					X
735AA022	Develop film by grey scale method					X
735AA023	Develop film by time and temperature method					X
735AA024	Develop film by visual method					X
735AA025	Dry film with film dryer					X
735AA026	Dry and handle film					X
735AA027	Develop contact silverplates					X
735AA028	Expose combination negatives with pin register by contact printing					X
735AA029	Expose for reverses, shrinks and spreads by contact printing					X
735AA030	Inspect half tones for density, quality and size					X
735AA031	Inspect negatives					X
735AA032	Correct negative defects					X
735AA033	Make contact prints					X
735AA034	Make duplicate negatives					X
735AA035	Opaque and scrib line negatives					X

PRINTING PHOTOGRAPHIC IMAGES

		ART	CTS	OLP	PHO	CO
735AB001	Expose black and white paper for enlargements				X	
735AB002	Expose contact sheet				X	
735AB003	Expose contact print				X	
735AB004	Expose color paper for enlargement				X	
735AB005	Dodge/burn in image during printing				X	
735AB006	Vignette image during printing				X	
735AB007	Diffuse image during printing				X	
735AB008	Print tone-line conversion				X	
735AB009	Posterize photograph				X	
735AB010	Print sabatier effect enlargement				X	
735AB011	Sandwich negatives during printing				X	

		ART	CTS	OLP	PHO	CO
735AB012	Copy black and white slide				X	
735AB013	Copy color slide				X	
735AB014	Copy print using view camera				X	
735AB015	Clean negatives				X	
735AB016	Establish exposure for black and white print using analyzer				X	
735AB017	Establish exposure for black and white print using test strip				X	
735AB018	Establish color filtration and exposure for color paper using analyzer				X	
735AB019	Establish filtration and exposure for color paper using test strip				X	

PROCESSING PHOTOGRAPHIC PAPER

		ART	CTS	OLP	PHO	CO
735AC001	Mix stock solution for paper				X	
735AC002	Process black and white paper using trays				X	
735AC003	Process black and white paper using automatic processor				X	
735AC004	Process black and white paper using stabilization processor				X	
735AC005	Process color paper using trays				X	
735AC006	Process color paper using automatic processor				X	
735AC007	Process color paper using drum/tube processing				X	
735AC008	Process print archivally				X	

FINISHING PRINTS

		ART	CTS	OLP	PHO	CO
735AD001	Tone print				X	
735AD002	Bleach print				X	
735AD003	Spot print				X	
735AD004	Airbrush print				X	
735AD005	Retouch print				X	
735AD006	Etch print				X	
735AD007	Trim print				X	
735AD008	Spray-finish print				X	
735AD009	Dry mount print				X	
735AD010	Position print on matte				X	
735AD011	Mount slides				X	

CLEANING AND MAINTAINING DARKROOM

		ART	CTS	OLP	PHO	CO
735AE001	Clean darkroom sinks				X	X
735AE002	Clean darkroom trays and mixing utensils				X	X
735AE003	Inspect mechanical components of cameras				X	X
735AE004	Clean photographic cameras				X	X
735AE005	Clean photographic lenses				X	X
735AE006	Perform minor maintenance on photographic cameras				X	X
735AE007	Clean automatic film processor				X	X
735AE008	Perform minor maintenance on automatic film processor				X	X
735AE009	Clean daylight tank processing unit				X	
735AE010	Clean drum/tube processing unit				X	
735AE011	Clean stabilization processing unit				X	
735AE012	Clean automatic film dryer				X	X
735AE013	Perform minor maintenance on automatic film dryer				X	X

		ART	CTS	OLP	PHO	CO
735AE014	Clean silver recovery unit				X	
735AE015	Perform minor maintenance on silver recovery unit				X	
735AE016	Maintain dustfree darkroom environment				X	X
735AE017	Maintain darkroom equipment				X	X
735AE018	Clean illumination system				X	X
735AE019	Perform minor maintenance on illumination system				X	X
735AE020	Solve darkroom problems				X	
735AE021	Inspect automatic film processor					X
735AE022	Inspect automatic film dryer					X
735AE023	Clean vacuum back					X
735AE024	Perform minor maintenance on vacuum back					X
735AE025	Clean PMT processor					X
735AE026	Perform minor maintenance on PMT processor					X
735AE027	Clean lithographic film processor					X
735AE028	Perform minor maintenance on lithographic film processor					X

PERFORMING STRIPPING OPERATIONS

		ART	CTS	OLP	PHO	CO
735AF001	Check flat against copy and dummy layout					X
735AF002	Check negatives against dummy layout					X
735AF003	Mark flats for proportions					X
735AF004	Cut rubylith for color separations					X
735AF005	Prepare masking sheets					X
735AF006	Inspect finished flat for accuracy					X
735AF007	Position and tape negatives on flat					X
735AF008	Opaque negative imperfections					X
735AF009	Open, inspect and correct image areas					X
735AF010	Insert halftones, screens or reverses					X
735AF011	Strip changes and corrections in flat					X
735AF012	Strip for double burns and pin register					X
735AF013	Strip line negatives					X
735AF014	Outline and strip halftones					X
735AF015	Strip multi-color flats					X
735AF016	Strip flats with screen tint					X
735AF017	Strip flats with reverse overprint					X
735AF018	Strip step-off flats					X
735AF019	Strip one-up flats					X
735AF020	Strip multi-unit flats					X
735AF021	Strip step and repeat flats					X
735AF022	Strip surprint flats					X
735AF023	Tape halftones and screen tints					X
735AF024	Adjust for light tables					X
735AF025	Finish flats					X
735AF026	Write instructions for succeeding operations					X

Education
For
Employment
Task Lists

Illinois
State Board of
Education

Adult
Vocational and
Technical Education

INDUSTRIAL OCCUPATIONS

1988

TRANSPORTATION CLUSTER

Automotive Mechanic
Diesel Mechanic
Gasoline Engine/Mower Repairer
*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

These materials were prepared under contract with the Illinois State Board of Education, Department of Adult, Vocational and Technical Education ("Illinois Competency Based Vocational Education Project," contract number PS-10-130).

AM = Automotive Mechanic
DM = Diesel Mechanic
GMR = Gasoline Engine/Mower Repairer

PREPARING NEW VEHICLES

		AM	DM	GMR
750A001	Adjust and lubricate door hinges and striker plates	X	X	
750A002	Locate water leaks	X	X	
750A003	Seal water leaks	X	X	
750A004	Locate duct leaks	X	X	
750A005	Seal duct leaks	X	X	
750A006	Locate rattles and noises	X		
750A007	Install door moldings	X		
750A008	Remove and replace window regulators	X	X	
750A009	Adjust window regulators	X	X	
750A010	Install air shocks	X	X	
750A011	Install C.B. and radios	X	X	

SERVICING SUSPENSION SYSTEMS

		AM	DM	GMR
750B001	Inspect suspension systems for worn parts	X	X	
750B002	Remove and replace suspension bushings and king pins	X	X	
750B003	Inspect tires and wheels for damage and irregular wear	X	X	
750B004	Remove and replace front wheel bearings (drum brakes)	X	X	
750B005	Remove and replace front wheel bearings (disc brakes)	X	X	
750B006	Repack wheel bearings	X	X	
750B007	Remove and replace shock absorbers	X	X	
750B008	Remove and replace control arms	X	X	
750B009	Remove and replace ball joints	X	X	
750B010	Remove and replace torsion bars	X	X	
750B011	Remove and replace coil springs	X	X	
750B012	Remove and replace spindle	X	X	
750B013	Remove and replace McPherson strut assembly	X		
750B014	Rebuild McPherson strut assembly	X		
750B015	Remove and replace trunnion pin assembly	X	X	
750B016	Remove and replace leaf spring assembly	X	X	
750B017	Remove and replace spring hangers	X	X	
750B018	Remove and replace "I" beam	X	X	
750B019	Remove and replace stabilizer and bushings	X	X	
750B020	Replace idler arm	X	X	
750B021	Replace pitman arm	X	X	
750B022	Inspect walking beams		X	
750B023	Replace walking beams		X	
750B024	Inspect torque arms	X	X	
750B025	Replace torque arms	X	X	
750B026	Inspect and adjust torsion bar	X	X	
750B027	Inspect ball joints	X	X	

SERVICING HEATING AND COOLING SYSTEMS

		AM	DM	GMR
750C001	Determine cause of overheating	X	X	
750C002	Test thermal sensing switch	X	X	
750C003	Remove and replace thermal sensing switch	X	X	
750C004	Remove and replace drive belts	X	X	
750C005	Test coolant freezing point	X	X	
750C006	Install antifreeze	X	X	

		AM	DM	GMR
750C007	Inspect and replace water hoses	X	X	
750C008	Check variable speed fan clutch	X	X	
750C009	Remove and replace variable speed fan clutch	X	X	
750C010	Remove and replace electric cooling fan motor	X	X	
750C011	Chemically clean cooling system	X	X	
750C012	Remove and replace thermostat	X	X	
750C013	Test thermostat	X	X	
750C014	Test coolant pressure caps	X	X	
750C015	Pressure test cooling system	X	X	
750C016	Remove and replace heater hoses	X	X	
750C017	Remove and replace radiator hoses	X	X	
750C018	Remove and replace radiator	X	X	
750C019	Rebuild blower assembly on air-cooled engines	X	X	
750C020	Remove and replace heater cores	X	X	
750C021	Remove and replace water pump	X	X	
750C022	Inspect shutter stat		X	

PERFORMING STEERING AND WHEEL SERVICES

		AM	DM	GMR
750D001	Inspect steering gear and linkage for worn parts	X	X	
750D002	Check and service fluid level	X	X	
750D003	Lubricate steering gear and linkage	X	X	
750D004	Test tire pressure	X	X	
750D005	Rotate tires	X		
750D006	Balance wheel and tire assembly	X	X	
750D007	Adjust steering sector	X	X	
750D008	Remove and replace steering linkage components	X	X	
750D009	Remove and replace manual steering sector	X	X	
750D010	Remove and replace steering damper	X	X	
750D011	Remove and replace power steering hoses	X	X	
750D012	Remove and replace belt(s) and set tension	X	X	
750D013	Remove and replace power steering cylinder	X	X	
750D014	Remove and replace power steering control valve assembly	X	X	
750D015	Rebuild power steering control valve assembly	X	X	
750D016	Remove and replace power steering pump	X	X	
750D017	Rebuild rack and pinion power steering assembly	X	X	
750D018	Rebuild rack and pinion manual steering assembly	X	X	
750D019	Adjust toe-in	X	X	
750D020	Align front end	X	X	
750D021	Align rear wheels	X	X	
750D022	Remove and replace turn signal switch	X	X	
750D023	Remove and replace ignition switch rack	X	X	
750D024	Remove and replace steering wheel	X	X	
750D025	Remove and replace mast jacket	X	X	
750D026	Set center line steering	X	X	
750D027	Check steering axis inclination	X	X	
750D028	Remove and replace tilt wheel and telescope	X	X	
750D029	Remove and replace power steering seals	X	X	
750D030	Remove and replace four-way switch	X	X	
750D031	Rebuild steering column	X	X	
750D032	Remove and replace steering column bearings, shift tube and socket	X	X	
750D033	Remove and replace steering column	X	X	
750D034	Replace shift detent in column	X	X	
750D035	Remove and replace rack and pinion power steering assembly	X	X	

SERVICING BRAKE SYSTEMS

		AM	DM	GMR
750E001	Check brake operation	X	X	
750E002	Inspect brake hoses and lines	X	X	
750E003	Flush brake system	X	X	
750E004	Adjust brake shoes	X	X	
750E005	Free up parking brake cable and linkage	X		
750E006	Adjust parking brake linkage	X		
750E007	Remove and replace parking brake cable and linkage	X		
750E008	Remove and replace parking brake external band	X		
750E009	Remove and replace brake shoes	X	X	
750E010	Remove and replace self-adjusters	X		
750E011	Remove and replace wheel cylinder	X	X	
750E012	Rebuild wheel cylinder	X	X	
750E013	Cam grind brake shoe	X	X	
750E014	Grind (turn) brake drum	X	X	
750E015	Recondition backing plate	X	X	
750E016	Remove and replace disc brake rotor	X	X	
750E017	Reface disc brake rotor	X	X	
750E018	Remove and replace caliper assembly	X	X	
750E019	Rebuild caliper assembly	X	X	
750E020	Remove and replace master cylinder	X	X	
750E021	Rebuild master cylinder	X	X	
750E022	Remove and replace hydraulic power brake unit	X	X	
750E023	Remove and replace hydrobrake booster unit	X	X	
750E024	Bleed brake system	X	X	
750E025	Remove and replace proportioning meter (combination valve)	X	X	
750E026	Test brake antilock system	X	X	
750E027	Replace defective components in brake antilock system	X	X	
750E028	Test rotor parallelism	X	X	
750E029	Test rotor runout	X	X	
750E030	Torque wheel lug nuts	X	X	
750E031	Check and service fluid level	X	X	
750E032	Replace wheels	X	X	
750E033	Repack wheel bearings	X	X	
750E034	Replace hydraulic lines and hoses	X	X	
750E035	Adjust air brakes	X	X	
750E036	Inspect air valves		X	
750E037	Replace air valves		X	
750E038	Inspect compressor		X	
750E039	Replace air compressor		X	
750E040	Test air compressor governor		X	
750E041	Replace air compressor governor		X	
750E042	Inspect antiskid system		X	
750E043	Inspect air chambers		X	
750E044	Replace air chambers		X	
750E045	Inspect parking brake chamber		X	
750E046	Replace parking brake chamber		X	
750E047	Test air system for leaks		X	
750E048	Reline air brake		X	
750E049	Replace air valves		X	

SERVICING EMISSION CONTROL SYSTEMS

		AM	DM	GMR
750F001	Test emission control system using propane enrichment apparatus	X		
750F002	Remove and replace vacuum hoses	X	X	

		AM	DM	GMR
750F003	Test positive crankcase ventilation system	X		
750F004	Remove and replace positive crankcase ventilation valve	X		
750F005	Remove and replace positive crankcase ventilation valve hose(s)	X		
750F006	Test vacuum advance/retard device	X		
750F007	Remove and replace vacuum advance/retard device	X		
750F008	Test electrical advance/retard device	X		
750F009	Check idle solenoid	X		
750F010	Remove and replace idle solenoid	X		
750F011	Remove and replace deceleration valve	X		
750F012	Test thermostatic air cleaner	X	X	
750F013	Adjust thermostatic air cleaner	X	X	
750F014	Remove and replace thermostatic air cleaner	X	X	
750F015	Check exhaust gas recirculation valve operation	X		
750F016	Remove and replace exhaust gas recirculation valve	X		
750F017	Check air injection system	X		
750F018	Remove and replace air pump	X		
750F019	Remove and repair diverter and anti-backfire valve	X		
750F020	Test fuel evaporation system	X		
750F021	Remove and replace closed system charcoal canister filter	X		
750F022	Test back pressure of exhaust system	X		
750F023	Remove and replace catalytic converter	X		
750F024	Remove and replace beads in catalytic converter	X		
750F025	Test exhaust oxygen sensor	X		
750F026	Remove and replace exhaust oxygen sensor	X		
750F027	Test electronic fuel mixture control system	X		

SERVICING EXHAUST SYSTEMS

		AM	DM	GMR
750G001	Check exhaust system for leaks and restrictions	X	X	
750G002	Remove and replace exhaust system supports	X	X	
750G003	Remove and replace muffler	X	X	
750G004	Remove and replace exhaust pipe	X	X	
750G005	Remove and replace tail pipe	X	X	
750G006	Remove and replace exhaust manifold	X	X	
750G007	Inspect exhaust system	X	X	
750G008	Inspect exhaust manifold	X	X	
750G009	Inspect turbocharger	X	X	
750G010	Replace turbocharger	X	X	
750G011	Rebuild turbocharger	X	X	

SERVICING HEATING AND AIR-CONDITIONING SYSTEMS

		AM	DM	GMR
750H001	Inspect control cables	X	X	
750H002	Test electrical control circuits	X	X	
750H003	Remove and replace compressor belts	X	X	
750H004	Test vacuum components	X	X	
750H005	Remove and replace vacuum components	X	X	
750H006	Test air-conditioning thermal switch	X	X	
750H007	Test blower motor	X	X	
750H008	Remove and replace blower motor	X	X	
750H009	Test thermostatic clutch switch	X	X	
750H010	Remove and replace thermostatic clutch switch	X	X	
750H011	Inspect air-conditioning magnetic clutch switch	X	X	
750H012	Remove and replace air-conditioning magnetic clutch switch (piston type)	X	X	

		AM	DM	GMR
750H013	Inspect clutch and pulley assembly	X	X	
750H014	Remove and replace clutch and hub assembly (rotary type)	X	X	
750H015	Test air conditioner charge	X	X	
750H016	Charge system using pound cans	X	X	
750H017	Charge system using bulk source	X	X	
750H018	Perform leak test with halide torch	X	X	
750H019	Perform leak test with electronic tester	X	X	
750H020	Remove and replace refrigerant lines	X	X	
750H021	Fabricate refrigerant lines	X	X	
750H022	Remove and replace compressor seals	X	X	
750H023	Check compressor oil level	X	X	
750H024	Inspect dryer	X	X	
750H025	Remove and replace dryer in air-conditioning unit	X	X	
750H026	Remove and replace condenser in air-conditioning unit	X	X	
750H027	Remove and replace evaporator	X	X	
750H028	Remove and replace metering orifice valve (expansion valve)	X	X	
750H029	Test throttle-suctioning valve	X	X	
750H030	Remove and replace throttle-suctioning valve	X	X	
750H031	Test compressor reed plates	X	X	
750H032	Remove and replace compressor reed plates	X	X	
750H033	Remove and replace compressor	X	X	
750H034	Rebuild rotary compressor (swash-plate)	X	X	
750H035	Remove and replace heater core	X	X	
750H036	Install air-conditioning system	X	X	
750H037	Remove and replace low pressure cutout switch	X	X	
750H038	Remove and replace high pressure cutout switch	X	X	
750H039	Evacuate and charge refrigeration system	X	X	
750H040	Check system for leaks	X	X	
750H041	Replace refrigeration clutch	X	X	
750H042	Inspect refrigeration controls	X	X	
750H043	Repair refrigeration controls	X	X	

SERVICING FUEL SYSTEMS

		AM	DM	GMR
750I001	Test carburetor adjustment using combustion analyzer	X		
750I002	Test carburetor adjustment using infrared tester	X		
750I003	Test carburetor adjustment using propane enrichment apparatus	X		
750I004	Adjust carburetor idle mixture	X		
750I005	Adjust antistall device	X		
750I006	Inspect carburetor linkage for binding and worn parts	X		
750I007	Check carburetor for vacuum leaks	X		
750I008	Remove and replace carburetor air cleaner	X		
750I009	Clean automatic choke	X		
750I010	Adjust automatic choke	X		
750I011	Free up manifold heat riser valve	X		
750I012	Remove and replace manifold heat riser valve	X		
750I013	Clean heat riser passages	X		
750I014	Adjust float	X		
750I015	Adjust carburetor metering rods	X		
750I016	Remove and replace carburetor metering jets	X		
750I017	Remove and replace carburetor	X		
750I018	Rebuild carburetor	X		
750I019	Remove and replace fuel filter unit	X	X	
750I020	Test and adjust fuel pump	X	X	
750I021	Remove and replace fuel pump	X	X	

		AM	DM	GMR
750I022	Test and adjust fuel injection system	X	X	
750I023	Remove and replace electrical fuel injector computer	X		
750I024	Test wiring harness of electronic fuel injection system	X		
750I025	Remove and replace fuel injection nozzle	X	X	
750I026	Rebuild fuel injection nozzle	X	X	
750I027	Remove and replace fuel injection pump	X	X	
750I028	Rebuild fuel injection pump	X	X	
750I029	Check waste gate adjustment	X	X	
750I030	Adjust waste gate adjustment	X	X	
750I031	Remove and replace turbocharger	X	X	
750I032	Rebuild turbocharger	X	X	
750I033	Remove and replace fuel lines	X	X	
750I034	Remove and replace fuel tank	X	X	
750I035	Remove and replace fuel level sending unit	X	X	
750I036	Test electronic fuel mixture control system	X	X	
750I037	Time diesel engine injector pump	X	X	
750I038	Remove and replace injector (diesel)	X	X	
750I039	Remove and replace injector line (diesel)	X	X	
750I040	Test injector spray pattern (diesel)	X	X	
750I041	Test calibration of injector lines (diesel)	X	X	
750I042	Bleed fuel system	X	X	
750I043	Clean fuel filter	X	X	
750I044	Check air cleaner element	X	X	
750I045	Clean air cleaner element	X	X	
750I046	Remove and replace wiring harness of electronic fuel system	X		

SERVICING IGNITION SYSTEMS

		AM	DM	GMR
750J001	Test engine using engine analyzer	X		
750J002	Test point dwell	X		
750J003	Remove and replace distributor cap	X		
750J004	Remove and replace distributor rotor	X		
750J005	Inspect distributor for worn parts	X		
750J006	Remove and replace points	X		
750J007	Remove and replace condenser	X		
750J008	Test condenser	X		
750J009	Remove and replace distributor	X		
750J010	Rebuild distributor	X		
750J011	Test control unit (electronic)	X		
750J012	Remove and replace control unit (electronic)	X		
750J013	Test pickup coil (electronic)	X		
750J014	Remove and replace pickup coil (electronic)	X		
750J015	Test automatic spark advance mechanism	X		
750J016	Remove and replace spark advance mechanism	X		
750J017	Adjust point dwell	X		
750J018	Test ignition timing	X		
750J019	Adjust ignition timing	X		
750J020	Test ignition coil	X		
750J021	Test primary circuit resistance	X		
750J022	Test secondary circuit continuity	X		
750J023	Test spark plug wire resistance	X		
750J024	Remove and replace spark plug wires	X		
750J025	Remove and replace spark plugs	X		
750J026	Clean spark plugs	X		
750J027	Gap spark plugs	X		

		AM	DM	GMR
750J028	Test glow plug electrical system	X	X	
750J029	Test glow plug	X	X	
750J030	Remove and replace glow plug	X	X	
750J031	Test solenoid	X	X	
750J032	Replace solenoid	X	X	
750J033	Test distributor	X		
750J034	Time distributor to engine	X		
750J035	Test generator/alternator	X	X	
750J036	Replace generator/alternator	X	X	
750J037	Test regulator	X	X	
750J038	Replace regulator	X	X	

SERVICING AUTOMATIC TRANSMISSIONS

		AM	DM	GMR
750K001	Pressure test transmission in vehicle	X	X	
750K002	Stall test automatic transmission in vehicle	X	X	
750K003	Clean transmission oil strainer	X	X	
750K004	Remove and replace transmission oil filter	X	X	
750K005	Adjust automatic transmission shift linkage	X	X	
750K006	Test vacuum shift modulator	X	X	
750K007	Remove and replace vacuum shift modulator	X	X	
750K008	Adjust bands	X	X	
750K009	Remove and replace transmission governor	X	X	
750K010	Clean transmission governor	X	X	
750K011	Clean transmission valve body	X	X	
750K012	Remove and replace automatic transmission with converter assembly	X	X	
750K013	Remove and replace automatic transmission without converter assembly	X	X	
750K014	Rebuild automatic transmission assembly	X	X	
750K015	Measure converter turbine end play	X	X	
750K016	Air pressure test transmission on bench	X	X	
750K017	Pressure flush converter assembly	X	X	
750K018	Pressure flush automatic transmission cooler assembly	X	X	
750K019	Remove and replace torque converter	X	X	
750K020	Remove and replace extension housing seal and bushing	X	X	
750K021	Splice cooler lines	X	X	
750K022	Replenish transmission oil	X	X	
750K023	Test electrical controls of automatic clutch converter	X	X	
750K024	Inspect and replace automatic transmission	X	X	
750K025	Inspect and service drive shaft and U-joints	X	X	
750K026	Replace U-joints	X	X	
750K027	Replace single speed differential	X	X	
750K028	Rebuild single speed differential	X	X	
750K029	Replace two-speed differential		X	
750K030	Rebuild shift unit		X	
750K031	Replace power divider		X	
750K032	Rebuild power divider		X	
750K033	Replace axles and seals	X	X	
750K034	Replace power takeoff		X	

PERFORMING ENGINE MECHANICAL DIAGNOSIS

		AM	DM	GMR
750L001	Test cylinder balance using engine analyzer	X		
750L002	Test cylinder leakage	X	X	

		AM	DM	GMR
750L003	Inspect engine for vacuum leaks	X	X	
750L004	Inspect engine for oil leaks	X	X	
750L005	Inspect to determine cause of overheating	X	X	
750L006	Inspect cooling system for source of coolant loss	X	X	
750L007	Inspect valve train and guides for cause of malfunctions	X	X	
750L008	Inspect engine for source of mechanical engine noise	X	X	

SERVICING ENGINE BLOCKS

		AM	DM	GMR
750M001	Steam clean engine	X	X	
750M002	Test oil pump pressure	X	X	
750M003	Test oil pressure relief valve	X	X	
750M004	Remove and replace motor mounts	X	X	
750M005	Remove and replace engine assembly	X	X	
750M006	Remove and replace oil pan	X	X	
750M007	Remove and replace rod bearing(s)	X	X	
750M008	Remove and replace crankshaft	X	X	
750M009	Inspect block for warp	X	X	
750M010	Bore cylinders	X	X	
750M011	Hone cylinders	X	X	
750M012	Install cam bearings	X	X	
750M013	Assemble short block	X	X	
750M014	Check engine compression	X	X	
750M015	Replace intake manifold	X	X	
750M016	Inspect and replace exhaust manifold	X	X	
750M017	Replace water manifold		X	
750M018	Replace clutch assembly	X	X	
750M019	Replace turboblower	X	X	
750M020	Replace water pump	X	X	
750M021	Replace cylinder heads	X	X	
750M022	Rebuild water pump		X	
750M023	Replace connecting rods and pistons	X	X	
750M024	Replace sleeves		X	
750M025	Replace vibration damper	X	X	
750M026	Replace timing flow cover		X	
750M027	Replace crankshaft assembly	X	X	
750M028	Replace camshaft assembly	X	X	
750M029	Replace oil seals	X	X	
750M030	Replace freeze plugs	X	X	

SERVICING CYLINDER HEADS AND VALVE TRAINS

		AM	DM	GMR
750N001	Inspect for rocker arm lubrication	X	X	
750N002	Remove and replace intake manifold	X	X	
750N003	Test valve lifters	X	X	
750N004	Remove and replace cylinder head	X	X	
750N005	Inspect cylinder head for warp or cracks	X	X	
750N006	Rebuild cylinder head	X	X	
750N007	Remove and replace harmonic balancer	X	X	
750N008	Remove and replace timing chain or belt	X	X	
750N009	Remove and replace timing gear	X	X	
750N010	Remove and replace camshaft	X	X	
750N011	Remove and replace camshaft bearings	X	X	
750N012	Adjust hydraulic valve lifters	X	X	
750N013	Adjust mechanical valve lifters	X	X	

SERVICING ELECTRICAL SYSTEMS

		AM	DM	GMR
7500001	Inspect battery electrolyte level	X	X	
7500002	Test battery with hydrometer	X	X	
7500003	Test battery for surface leakage	X	X	
7500004	Test battery voltage	X	X	
7500005	Test battery for capacity (load)	X	X	
7500006	Clean battery, posts and cable connections	X	X	
7500007	Measure ground system resistance	X	X	
7500008	Remove and replace battery cables	X	X	
7500009	Charge battery	X	X	
7500010	Test charging system output	X	X	
7500011	Test alternator output	X	X	
7500012	Remove and replace generator or alternator	X	X	
7500013	Rebuild generator	X	X	
7500014	Rebuild alternator	X	X	
7500015	Remove and replace charging system regulator	X	X	
7500016	Test starter control circuit	X	X	
7500017	Test starter current draw	X	X	
7500018	Remove and replace starter solenoid	X	X	
7500019	Test electrical motors	X	X	
7500020	Remove and replace starter	X	X	
7500021	Rebuild starter	X	X	
7500022	Test switches	X	X	
7500023	Remove and replace switches	X	X	
7500024	Test fuses	X	X	
7500025	Remove and replace fuses	X	X	
7500026	Test circuit breakers	X	X	
7500027	Remove and replace circuit breakers	X	X	
7500028	Remove and replace fuse block assembly	X	X	
7500029	Inspect lighting system for faulty bulbs	X	X	
7500030	Remove and replace light bulbs	X	X	
7500031	Remove and replace sockets	X	X	
7500032	Adjust headlights	X	X	
7500033	Test parking light circuit	X	X	
7500034	Remove and replace dimmer switch	X	X	
7500035	Test turn signal circuit	X	X	
7500036	Remove and replace turn signal switch	X	X	
7500037	Adjust backup light switch	X	X	
7500038	Remove and replace backup light switch	X	X	
7500039	Adjust stop light switch	X	X	
7500040	Remove and replace stop light switch	X	X	
7500041	Check horn circuit	X	X	
7500042	Test horn relay	X	X	
7500043	Remove and replace horn relay	X	X	
7500044	Remove and replace horn	X	X	
7500045	Test windshield wiper circuit	X	X	
7500046	Remove and replace windshield wiper motor	X	X	
7500047	Test constant voltage regulator	X	X	
7500048	Remove and replace constant voltage regulator	X	X	
7500049	Adjust voltage regulator output	X	X	
7500050	Test generator output	X	X	
7500051	Test instrument gauges	X	X	
7500052	Remove and replace instrument gauges	X	X	
7500053	Test sending units	X	X	
7500054	Remove and replace sending units	X	X	

		AM	DM	GMR
750O055	Test warning lamps	X	X	
750O056	Remove and replace warning lamps	X	X	

SERVICING ELECTRICAL ACCESSORIES

		AM	DM	GMR
750P001	Test cruise control unit	X		
750P002	Remove and replace cruise control components	X		
750P003	Test automatic alarm system	X		
750P004	Remove and replace automatic alarm system components	X		
750P005	Test radio power circuit	X	X	
750P006	Inspect radio speaker	X	X	
750P007	Remove and replace radio speaker	X	X	
750P008	Test radio antenna	X	X	
750P009	Remove and replace radio antenna	X	X	
750P010	Trim radio antenna	X	X	
750P011	Remove and replace power antenna motor	X		
750P012	Remove and replace power window motors	X	X	
750P013	Remove and replace power seat motors	X		
750P014	Test cigarette lighter circuit	X	X	
750P015	Remove and replace cigarette lighter receptacle	X	X	
750P016	Replace radio components	X	X	
750P017	Repair windshield wipers	X	X	
750P018	Test lighting systems	X	X	
750P019	Test electrical shift mechanisms	X	X	
750P020	Repair electrical shift mechanisms	X	X	
750P021	Repair lighting system	X	X	

SERVICING MANUAL TRANSMISSIONS

		AM	DM	GMR
750Q001	Inspect and adjust shift linkage	X	X	
750Q002	Adjust manual clutch	X	X	
750Q003	Adjust hydraulic clutch free travel	X	X	
750Q004	Remove and replace extension housing seal and bushing	X	X	
750Q005	Remove and replace manual transmission	X	X	
750Q006	Rebuild manual transmission	X	X	
750Q007	Remove and replace pressure plate assembly	X	X	
750Q008	Remove and replace clutch release bearing	X	X	
750Q009	Remove and replace release fork	X	X	
750Q010	Remove and replace pilot bearing	X	X	
750Q011	Remove and replace hydraulic clutch slave cylinder	X	X	
750Q012	Rebuild hydraulic clutch slave cylinder	X	X	
750Q013	Remove and replace hydraulic clutch master cylinder	X	X	
750Q014	Rebuild hydraulic clutch master cylinder	X	X	
750Q015	Measure flywheel runout	X	X	
750Q016	Replace flywheel	X	X	
750Q017	Repair flywheel		X	
750Q018	Measure bellhousing runout	X	X	
750Q019	Remove and replace four-wheel-drive transfer case	X		
750Q020	Rebuild four-wheel-drive transfer case	X		
750Q021	Check fluid levels	X	X	

SERVICING DRIVE LINES

		AM	DM	GMR
750R001	Inspect drive line for worn parts	X	X	
750R002	Lubricate universal joint	X	X	

		AM	DM	GMR
750R003	Remove and replace universal joint	X	X	
750R004	Remove and replace trunnion joint	X	X	
750R005	Lubricate speedometer cable	X	X	
750R006	Remove and replace speedometer cable	X	X	
750R007	Remove and replace speedometer drive gear	X	X	
750R008	Remove and replace axle seal	X	X	
750R009	Remove and replace axle bearing	X	X	
750R010	Balance drive shaft (in car)	X		
750R011	Remove and replace transmission mount	X	X	
750R012	Check drive line angles	X	X	
750R013	Remove and replace differential assembly (integral)	X		
750R014	Remove and replace differential assembly (removable)	X	X	
750R015	Rebuild differential assembly (integral)	X		
750R016	Rebuild differential assembly (removable)	X		
750R017	Remove and replace transaxle assembly	X		
750R018	Rebuild transaxle assembly	X		
750R019	Remove and replace front-wheel-drive axle assemblies	X		
750R020	Rebuild four wheel drive locking hubs	X		
750R021	Remove and replace pinion seal	X	X	
750R022	Rebuild power takeoff	X	X	
750R023	Remove and replace drive shaft center support bearings	X	X	
750R024	Rebuild constant velocity universal joints	X		
750R025	Remove and replace constant velocity joints	X		
750R026	Repack constant velocity joints	X		
750R027	Remove and replace constant velocity boots	X		

PERFORMING WELDING AND OXY-FUEL CUTTING

		AM	DM	GMR
750S001	Set up oxy-fuel welding and cutting equipment	X	X	X
750S002	Braze mild steel	X	X	X
750S003	Solder copper tubing	X	X	
750S004	Cut mild steel with oxy-fuel equipment	X	X	X
750S005	Set up shielded metal arc welding equipment	X	X	X
750S006	Weld 3/16" mild steel in flat position	X	X	X
750S007	Weld 3/16" mild steel in horizontal position	X	X	X
750S008	Solder electrical components and wire	X	X	X
750S009	Heat metal parts to assist in removal	X	X	X
750S010	Weld cast iron	X	X	
750S011	Braze cast iron	X	X	

PERFORMING DIESEL ENGINE TUNE-UPS

		AM	DM	GMR
750T001	Test and adjust air inductor system	X	X	
750T002	Test fuel system	X	X	
750T003	Adjust injector timing	X	X	
750T004	Adjust valve clearance	X	X	
750T005	Adjust fuel pressure	X	X	
750T006	Adjust control rack	X	X	
750T007	Check and adjust linkage for full throttle operation	X	X	

PERFORMING SAFETY PRACTICES

		AM	DM	GMR
750U001	Apply shop and equipment safety rules	X	X	
750U002	Apply first aid procedures	X	X	X
750U003	Complete an accident report	X	X	X

		AM	DM	GMR
750U004	Evaluate personnel safety violations	X	X	
750U005	Inspect the workplace for safe working environment	X	X	X
750U006	Report shop safety violations	X	X	X
750U007	Correct safety violations	X	X	X
750U008	Participate in shop safety committee	X	X	X
750U009	Comply with shop and equipment safety rules			X
750U010	Conduct safety briefings on OSHA regulations			X

PERFORMING PREVENTATIVE MAINTENANCE

		AM	DM	GMR
750V001	Perform underside inspections	X	X	
750V002	Service crankcase lube	X	X	
750V003	Service fuel filter	X	X	
750V004	Perform underhood inspections	X	X	
750V005	Complete lubrication operations	X	X	
750V006	Service tires	X	X	

PERFORMING MAINTENANCE CONTROL FUNCTIONS

		AM	DM	GMR
750W001	Complete labor time cards	X	X	X
750W002	Complete requests for procurement of parts	X	X	X
750W003	Complete unsatisfactory reports	X	X	X
750W004	Enter work performed on work orders	X	X	X
750W005	Follow up on requisitions	X	X	X
750W006	Initiate and complete work order	X	X	X
750W007	Initiate request for parts	X	X	X
750W008	Maintain daily work control logs or status boards	X	X	
750W009	Plan, schedule and control maintenance of vehicles	X	X	
750W010	Prepare reports of vehicle defects	X	X	X
750W011	Spot check service orders	X	X	
750W012	Identify interchangeable parts			X
750W013	Obtain parts from stockroom			X

PERFORMING PRECISION MEASUREMENTS

		AM	DM	GMR
750X001	Measure parts using standard and metric measurement systems	X	X	X
750X002	Measure parts with steel rule	X	X	X
750X003	Measure parts using dial indicators	X	X	X
750X004	Measure parts using outside micrometers	X	X	X
750X005	Measure parts using inside micrometers	X	X	X
750X006	Measure parts using depth micrometers	X	X	X
750X007	Measure parts using special micrometers	X	X	X
750X008	Measure parts using inside and outside calipers	X	X	X
750X009	Measure threads	X	X	X
750X010	Calibrate precision measuring tools	X	X	X
750X011	Clean and store precision measuring tools	X	X	X
750X012	Inspect parts with comparison measuring tools			X
750X013	Measure parts using telescoping gages			X
750X014	Measure parts using small hole gages			X
750X015	Measure parts using bore gages			X
750X016	Measure parts using radius gages			X

PERFORMING CHASSIS AND CAB MAINTENANCE

		AM	DM	GMR
750Y001	Inspect fifth wheel and king pin		X	
750Y002	Inspect and service landing gears		X	
750Y003	Inspect and service slider tandem		X	
750Y004	Replace torque arms	X	X	
750Y005	Repair doors	X	X	
750Y006	Install windshield, back and side glass	X	X	
750Y007	Inspect and service hood	X	X	
750Y008	Inspect and repair mirrors	X	X	
750Y009	Inspect and service ventilation system	X	X	
750Y010	Inspect and service seat	X	X	

PERFORMING HOUSEKEEPING AND RECORDKEEPING ACTIVITIES

		AM	DM	GMR
750Z001	Clean and maintain work area and leave in safe condition			X
750Z002	Follow tool crib procedures			X
750Z003	Report problems to supervisor			X
750Z004	Determine basic maintenance procedures using manuals			X
750Z005	Participate in participative management program (Quality Circles)			X

PERFORMING BENCHWORK OPERATIONS

		AM	DM	GMR
750AA001	Cut threads with taps and dies			X
750AA002	Remove threaded fasteners and repair threads			X
750AA003	Polish parts using coated abrasives			X
750AA004	Disassemble, assemble and straighten parts using arbor press			X
750AA005	Disassemble, fit and reassemble parts			X
750AA006	Lift and position workpiece using hoists			X
750AA007	Repair handtools			X
750AA008	Work materials with hand tools			X
750AA009	Work materials with portable power tools			X

SERVICING SMALL ENGINE FUEL SYSTEMS

		AM	DM	GMR
750AB001	Diagnose fuel system problems			X
750AB002	Clean fuel systems			X
750AB003	Remove and replace fuel systems			X
750AB004	Diagnose and repair fuel pumps			X
750AB005	Diagnose and repair fuel gage system			X
750AB006	Service air cleaners			X
750AB007	Diagnose carburetor problems			X
750AB008	Disassemble, clean and reassemble a pulsation-type carburetor			X
750AB009	Disassemble, clean and reassemble a vacuum-type carburetor			X
750ABC10	Disassemble, clean and reassemble a float-type carburetor			X
750AB011	Rebuild carburetors			X
750AB012	Adjust carburetors			X
750AB013	Adjust engine idle speed			X
750AB014	Synchronize carburetors			X
750AB015	Repair governor assembly			X

		AM	DM	GMR
750AB016	Inspect and service intake manifold			X
750AB017	Remove and replace intake manifolds			X
750AB018	Service crankcase breather			X
750AB019	Inspect and adjust throttle linkage			X
750AB020	Repair and adjust manual choke system			X
750AB021	Troubleshoot fuel system			X

SERVICING SMALL ENGINE CHARGING/STARTING CIRCUITS

		AM	DM	GMR
750AC001	Remove and replace pullies			X
750AC002	Remove and replace belts			X
750AC003	Remove and replace alternator			X
750AC004	Rebuild alternator			X
750AC005	Remove and replace generator			X
750AC006	Rebuild generator			X
750AC007	Remove and replace voltage regulator			X
750AC008	Remove and replace rectifiers			X
750AC008	Remove and replace diode assembly			X
750AC010	Clean commutator			X
750AC011	Remove and replace starter			X
750AC012	Repair starter			X
750AC013	Diagnose and repair solenoid and relay problems			X
750AC014	Remove and replace ignition switch			X
750AC015	Remove and replace charging system gages or indicator lights			X
750AC016	Diagnose and repair charging circuit wiring system problems			X
750AC017	Service battery			X
750AC018	Prepare new battery for service			X
750AC019	Troubleshoot charging circuits			X
750AC020	Troubleshoot starting circuit			X

SERVICING SMALL ENGINE MANUAL STARTING SYSTEMS

		AM	DM	GMR
750AD001	Diagnose manual starting system problems			X
750AD002	Remove and replace manual starting assembly			X
750AD003	Disassemble and clean manual starter			X
750AD004	Rebuild manual starter			X
750AD005	Troubleshoot manual starting system			X

SERVICING SMALL ENGINE IGNITION SYSTEMS

		AM	DM	GMR
750AE001	Diagnose ignition system problems			X
750AE002	Remove, test, clean, adjust and reinstall spark plugs			X
750AE003	Remove and replace ignition wiring			X
750AE004	Remove and replace distributor cap and rotor			X
750AE005	Test, remove and replace distributor			X
750AE006	Adjust breaker points			X
750AE007	Remove and replace points and condenser			X
750AE008	Remove and replace plunger and guide			X
750AE009	Adjust armature air gap			X
750AE010	Remove, test and replace ignition coil			X
750AE011	Remove, test and replace magneto			X
750AE012	Test electronic ignition components			X
750AE013	Remove and replace electronic ignition components			X

		AM	DM	GMR
750AE014	Test, remove and replace safety kill switch			X
750AE015	Time an electronic ignition system			X
750AE016	Time a magneto ignition system			X
750AE017	Time a battery coil ignition system			X
750AE018	Troubleshoot an electronic ignition system			X
750AE019	Troubleshoot a magneto ignition system			X
750AE020	Troubleshoot a battery coil ignition system			X

REPAIRING AND OVERHAULING SMALL ENGINES

		AM	DM	GMR
750AF001	Check compression			X
750AF002	Check oil pressure and levels			X
750AF003	Diagnose engine mechanical condition			X
750AF004	Remove and replace oil pump			X
750AF005	Rebuild oil pump			X
750AF006	Inspect pistons, rods and cylinder head			X
750AF007	Remove, assemble and install piston, rings and connecting rod assembly			X
750AF008	Remove and replace connecting rods			X
750AF009	Remove and replace crankshaft			X
750AF010	Remove and replace cylinder head			X
750AF011	Bore engine cylinder			X
750AF012	Remove, replace and retime a camshaft			X
750AF013	Remove and replace valve train			X
750AF014	Remove and replace rocker arm assemblies			X
750AF015	Remove and replace reed valves			X
750AF016	Replace valves and valve seats			X
750AF017	Grind valves			X
750AF018	Lap valves			X
750AF019	Grind or cut valve seats			X
750AF020	Adjust valve clearance			X
750AF021	Inspect compression release mechanism			X
750AF022	Remove and replace compression release mechanism			X
750AF023	Assemble and adjust ignition timing mechanisms			X
750AF024	Remove and replace gaskets			X
750AF025	Remove and replace oil seals			X
750AF026	Remove transferable components from original engine			X
750AF027	Remove and replace engine block			X
750AF028	Clean and inspect engine block			X
750AF029	Install components on new block			X
750AF030	Install engine block			X
750AF031	Rebuild two-cycle engine			X
750AF032	Rebuild four-cycle engine			X

SERVICING SMALL ENGINE COOLING SYSTEMS

		AM	DM	GMR
750AG001	Inspect air cooling system components			X
750AG002	Clean debris from cooling system			X
750AG003	Inspect water cooling system components			X
750AG004	Remove and replace radiators			X
750AG005	Remove and replace water pump			X
750AG006	Remove and replace hoses			X

PERFORMING SMALL ENGINE LUBRICATION SERVICES

		AM	DM	GMR
750AH001	Inspect oil level and condition			X
750AH002	Change engine oil			X
750AH003	Clean oil filter			X
750AH004	Remove and replace oil filter			X
750AH005	Select lubricants			X
750AH006	Grease bearings and bushings			X
750AH007	Prepare fuel and oil mixture			X

SERVICING SMALL ENGINE EXHAUST SYSTEMS

		AM	DM	GMR
750AI001	Inspect exhaust system			X
750AI002	Remove and replace exhaust manifold			X
750AI003	Remove and replace exhaust pipes			X
750AI004	Remove and replace muffler			X
750AI005	Remove and replace heat shield			X

SERVICING LAWN AND GARDEN EQUIPMENT POWER TRANSMISSION SYSTEMS

		AM	DM	GMR
750AJ001	Inspect manual transmission assembly			X
750AJ002	Check transmission fluid level			X
750AJ003	Inspect manual transmission linkage, mounts and controls			X
750AJ004	Diagnose manual transmission problems			X
750AJ005	Remove and replace manual transmission			X
750AJ006	Remove and replace manual transmission linkage			X
750AJ007	Rebuild manual transmission			X
750AJ008	Diagnose hydrostatic transmission problems			X
750AJ009	Remove and replace hydrostatic transmission			X
750AJ010	Remove and replace hydrostatic transmission linkage			X
750AJ011	Rebuild hydrostatic transmission			X
750AJ012	Diagnose chain drive problems			X
750AJ013	Remove and replace chain drive mechanism			X
750AJ014	Diagnose belt drive system problems			X
750AJ015	Remove and replace belt drive system			X
750AJ016	Diagnose gear drive system problems			X
750AJ017	Remove and replace gear drive system			X
750AJ018	Diagnose clutch problems			X
750AJ019	Remove and replace clutch assembly			X
750AJ020	Adjust clutch			X
750AJ021	Adjust clutch controls			X
750AJ022	Remove and replace flywheel			X
750AJ023	Remove and replace differential			X
750AJ024	Diagnose differential problems			X
750AJ025	Diagnose gear reduction unit problems			X
750AJ026	Remove and replace gear reduction unit			X
750AJ027	Rebuild gear reduction unit			X

SERVICING LAWN AND GARDEN EQUIPMENT CHASSIS SYSTEMS

		AM	DM	GMR
750AK001	Inspect manual steering system			X
750AK002	Diagnose manual steering system problems			X
750AK003	Inspect front wheel alignment			X
750AK004	Remove and replace manual steering system			X
750AK005	Remove and replace steering column			X

		AM	DM	GMR
750AK006	Remove and replace steering gear			X
750AK007	Inspect power steering system			X
750AK008	Remove and replace power steering system			X
750AK009	Remove and replace tie rod ends			X
750AK010	Remove and replace power steering hoses, lines and belts			X
750AK011	Remove and replace power steering pump			X
750AK012	Diagnose power steering system problems			X
750AK013	Rebuild power steering cylinder and control valve			X
750AK014	Inspect tires and wheels			X
750AK015	Remove and replace wheel bearings			X
750AK016	Pack and adjust wheel bearings			X
750AK017	Diagnose wheel bearing problems			X
750AK018	Repair flat tires			X
750AK019	Remove and replace lawn tractor brakes			X
750AK020	Adjust lawn tractor brakes			X
750AK021	Diagnose lawn tractor brake system problems			X
750AK022	Inspect lawn tractor frame and body			X
750AK023	Repair lawn tractor body			X
750AK024	Repair lawn tractor frame			X

SERVICING LAWN AND GARDEN EQUIPMENT HYDRAULIC SYSTEMS

		AM	DM	GMR
750AL001	Inspect and test lawn tractor hydraulic system			X
750AL002	Remove and replace hydraulic system pump			X
750AL003	Remove and replace hydraulic fluid and filter			X
750AL004	Rebuild and adjust hydraulic pump			X
750AL005	Remove and replace hydraulic lines and hoses			X
750AL006	Remove and replace hydraulic system control valves			X
750AL007	Rebuild hydraulic system control valves			X
750AL008	Remove and replace hydraulic cylinder			X
750AL009	Rebuild hydraulic cylinder			X
750AL010	Diagnose lawn tractor hydraulic system problems			X

SETTING UP AND STORING LAWN AND GARDEN EQUIPMENT

		AM	DM	GMR
750AM001	Uncrate and assemble lawn and garden equipment			X
750AM002	Test and inspect new lawn and garden equipment			X
750AM003	Set up new lawn mowers			X
750AM004	Set up new lawn tractors			X
750AM005	Set up new lawn and garden equipment			X
750AM006	Prepare lawn and garden equipment for off-season storage			X
750AM007	Return lawn and garden equipment from storage			X

SERVICING LAWN MOWER ASSEMBLIES

		AM	DM	GMR
750AN001	Adjust height of cut			X
750AN002	Sharpen and balance lawn mower blades			X
750AN003	Remove and replace drive on self-propelled equipment			X
750AN004	Repair drive on self-propelled equipment			X
750AN005	Replace lawn mower throttle cables			X
750AN006	Adjust lawn mower clutch control rod			X
750AN007	Repair lawn mower safety devices			X

		AM	DM	GMR
750AN008	Adjust reel type mowers			X
750AN009	Grind bed knife and reel			X
750AN010	Inspect mower			X
750AN011	Repair cutter deck			X
750AN012	Remove and replace mower handles			X
750AN013	Remove and replace bagging system			X

CONDUCTING SHOP OPERATIONS

		AM	DM	GMR
750AO001	Answer customer questions			X
750AO002	Troubleshoot customer problems			X
750AO003	Determine repair method			X
750AO004	Perform public relations activities			X
750AO005	Prepare service bill			X
750AO006	Maintain accounts receivable/paid records			X
750AO007	Maintain receiving records			X
750AO008	Maintain records of service tools and equipment			X
750AO009	Receive and store parts and supplies			X
750AO010	Discuss delivery schedule with approved supplier			X
750AO011	Order parts and supplies			X
750AO012	Establish customer and equipment history files			X
750AO013	Establish customer files			X
750AO014	Update service manuals			X
750AO015	Update parts catalogs			X
750AO016	Determine economic feasibility of repair			X
750AO017	Calculate labor cost using a flat rate manual			X
750AO018	Estimate total cost of repair			X
750AO019	Prepare and submit warranty claims			X
750AO020	Plan the layout of a small engine repair facility			X

Education
For
Employment
Task Lists

Illinois
State Board of
Education

Adult
Vocational and
Technical Education

INDUSTRIAL OCCUPATIONS

1988

MANUFACTURING CLUSTER

Machine Tool Operator
Machinist
Tool and Die Maker
Punch Press Operator
Sheet Metal Worker
Combination Welder
Maintenance Repairer
Automated Manufacturing Systems Technician
Thermoplastic Machine Set-up Specialist
*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

These materials were prepared under contract with the Illinois State Board of Education, Department of Adult, Vocational and Technical Education ("Illinois Competency Based Vocational Education Project," contract number PS-10-130).

MANUFACTURING OCCUPATIONS CLUSTER MATRIX

MT = Machine Tool Operator
M = Machinist
TD = Tool and Die Maker
PP = Punch Press Operator
SM = Sheet Metal Worker
CW = Combination Welder
MR = Maintenance Repairer
AM = Automated Manufacturing Systems Technician
TP = Thermoplastic Machine Set-up Specialist

APPLYING SAFETY PRACTICES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760A001	Comply with shop and equipment safety rules	X	X	X	X	X	X	X	X	
760A002	Apply basic emergency first aid techniques	X	X	X	X	X	X	X	X	
760A003	Complete accident report	X	X	X	X	X	X	X	X	
760A004	Inspect work area and equipment for safe working environment	X	X	X	X	X	X	X	X	
760A005	Report shop, environmental and equipment safety violations	X	X	X	X	X	X	X	X	
760A006	Demonstrate use of fire extinguishers	X	X	X	X	X	X	X	X	
760A007	Participate in disaster control exercises	X	X	X	X		X	X	X	
760A008	Participate in shop safety committee	X	X	X	X		X	X	X	
760A009	Correct safety hazards	X	X	X	X	X	X	X	X	
760A010	Demonstrate cardiopulmonary resuscitation (CPR) techniques	X	X	X	X	X	X	X	X	
760A011	Comply with safety requirements for working around automated systems	X	X	X	X		X	X	X	
760A012	Participate in safety training program	X	X	X	X	X	X	X	X	
760A013	Conduct safety training program		X	X					X	

PERFORMING BENCHWORK OPERATIONS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760B001	Cut threads with taps and dies	X	X	X				X	X	
760B002	Remove threaded fasteners and repair threads	X	X	X				X	X	
760B003	Deburr parts	X	X	X		X		X	X	
760B004	Polish parts using coated abrasives	X	X	X				X	X	
760B005	Sharpen and polish tools using abrasive stones	X	X	X				X	X	
760B006	Rough finish parts with hand filing machines						X		X	
760B007	Rough grind parts with hand grinders						X	X	X	
760B008	Finish parts with hand grinders		X	X			X	X	X	
760B009	Determine high spots using pigment		X	X				X	X	
760B010	Remove high spots		X	X				X	X	
760B011	Polish and buff parts with portable hand tools		X	X				X	X	
760B012	Lap and fit parts		X	X				X	X	
760B013	Scrape friction surfaces			X				X	X	
760B014	Disassemble, assemble and straighten parts using arbor press	X	X	X			X	X	X	
760B015	Cut keyway with broach	X	X	X				X	X	
760B016	Set up and use hone to apply specified surface in hole	X	X	X						
760B017	Disassemble, fit and reassemble parts	X	X	X	X	X	X	X	X	
760B018	Lift and position workpiece using hoists	X	X	X	X		X	X	X	
760B019	Assemble jigs and fixtures		X	X						
760B020	Repair jigs and fixtures		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760B021	Fit and assemble metalworking dies			X						
760B022	Repair metalworking dies			X						
760B023	Assemble cutting tools			X						
760B024	Repair cutting tools			X						
760B025	Assemble gages			X						
760B026	Repair gages			X						
760B027	Repair handtools			X						
760B028	Plan assembly operations		X	X		X	X	X		
760B029	Supervise assembly operations		X	X						
760B030	Work materials with hand tools	X	X	X	X	X	X	X	X	
760B031	Work materials with portable power tools	X	X	X		X	X	X	X	
760B032	Bend metal with box and pan brake					X	X			
760B033	Bend sheet metal with cornice brake					X				
760B034	Bend metal with power brake					X	X			
760B035	Cut metal with power shear					X	X			
760B036	Notch materials					X	X			
760B037	Roll cylindrical metal shapes					X	X			
760B038	Chip slag						X			
760B039	Work materials with hydraulic iron worker					X	X			
760B040	Bevel pipe						X			
760B041	Position materials to be welded with positioners						X			
760B042	Position weldments						X			

PERFORMING PRECISION MEASUREMENT

		MT	M	TD	PP	SM	CW	MR	AM	TP
760C001	Measure parts with semi-precision measuring tools	X	X	X	X	X	X	X	X	
760C002	Inspect parts with precision measuring tools	X	X	X	X	X	X	X	X	
760C003	Inspect parts with comparison measuring tools	X	X	X	X	X	X	X	X	
760C004	Inspect parts using go/no go gages	X	X	X	X					
760C005	Measure parts using dial calipers	X	X	X	X					
760C006	Measure parts using vernier measuring tools	X	X	X	X					
760C007	Measure parts using outside micrometers	X	X	X	X					
760C008	Measure parts using inside micrometers	X	X	X	X					
760C009	Measure parts using depth micrometers	X	X	X	X					
760C010	Measure parts using special micrometers		X	X	X					
760C011	Measure parts using telescoping gages	X	X	X						
760C012	Measure parts using small hole gages	X	X	X						
760C013	Measure parts using bore gages	X	X	X						
760C014	Inspect parts using radius gages	X	X	X						
760C015	Set up and inspect parts using dial indicators	X	X	X	X			X	X	
760C016	Measure parts using optical comparators	X	X	X	X					
760C017	Measure parts with height gage	X	X	X	X					
760C018	Measure angles using sine bar		X	X						
760C019	Measure angles, arcs and locations from reference point		X	X						
760C020	Measure threads	X	X	X				X	X	
760C021	Measure tapers	X	X	X				X	X	
760C022	Inspect keyways	X	X	X				X	X	
760C023	Measure gears	X	X	X				X	X	
760C024	Inspect surface finish of parts	X	X	X				X	X	
760C025	Calibrate and use indicating micrometers		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760C026	Calibrate precision measuring tools	X	X	X				X	X	
760C027	Measure parts using mechanical measuring tools		X	X	X					
760C028	Measure parts using electronic measuring tools		X	X	X					
760C029	Measure parts using special measuring tools		X	X	X					
760C030	Clean and store precision measuring tools	X	X	X	X		X	X	X	
760C031	Perform first piece inspection		X	X	X					
760C032	Inspect parts according to quality control inspection standards and procedures	X	X	X	X		X			
760C033	Monitor reports of discrepancy or rejects during production process		X	X	X		X			
760C034	Conduct quality tests under differing environmental conditions	X	X	X	X		X			
760C035	Verify dimensions		X	X				X	X	
760C036	Verify alignments		X	X				X	X	
760C037	Verify clearances		X	X				X	X	
760C038	Inspect machined parts	X	X	X				X	X	
760C039	Inspect assemblies		X	X		X	X	X	X	
760C040	Inspect parts with metric measuring instruments	X	X	X	X	X	X	X	X	

PERFORMING LAYOUTS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760D001	Analyze specifications	X	X	X		X	X	X	X	
760D002	Compute layout dimensions	X	X	X		X	X	X	X	
760D003	Plan layout operations	X	X	X		X	X	X	X	
760D004	Calculate reference points		X	X		X	X	X	X	
760D005	Calculate angles from reference point		X	X		X	X	X	X	
760D006	Calculate arcs from reference point		X	X		X	X	X	X	
760D007	Calculate locations from reference point		X	X		X	X	X	X	
760D008	Verify workpiece specifications		X	X		X	X	X	X	
760D009	Lay out reference points		X	X		X	X	X	X	
760D010	Lay out angles, arcs and locations from reference point		X	X		X	X	X	X	
760D011	Label workpiece	X	X	X		X	X	X	X	
760D012	Perform semi-precision layouts	X	X	X		X	X	X	X	
760D013	Perform precision layouts from blueprints	X	X	X			X	X	X	
760D014	Perform sheet metal layouts from blueprints					X				
760D015	Perform layouts from templates					X	X			
760D016	Transfer layouts from models		X			X				
760D017	Perform pipe layouts						X			
760D018	Verify layouts		X	X		X	X	X	X	
760D019	Supervise layout operations		X	X			X			

OPERATING SAWS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760E001	Remove and replace saw blades	X	X	X			X			
760E002	Cut and weld band saw blades	X	X	X			X			
760E003	Calculate and set cutting speed and feed rate for sawing	X	X	X			X			
760E004	Saw straight, curved and irregular lines on vertical band saws	X	X	X			X			
760E005	Saw material to layout with vertical band saw	X	X	X			X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760E006	Set up and use vertical band saw for interior contour sawing	X	X	X						
760E007	Set up and use vertical band saw to file parts	X	X	X						
760E008	Cut straight lines on vertical band saw using automatic feed	X	X	X						
760E009	Cut angles on vertical band saw by tilting table	X	X	X						
760E010	Set up and use jigs and fixtures for special sawing operations	X	X	X						
760E011	Slot, groove, miter and trim parts on saw	X	X	X			X			
760E012	Set up and use stops and guides to control dimension of cuts	X	X	X			X			
760E013	Set up and use automatic bar feed mechanism for production work	X	X							
760E014	Set up and use horizontal band saw for production work	X	X				X			
760E015	Set up and use power hack saw for production work	X	X				X			
760E016	Set up and use circular saw for production work	X	X				X			
760E017	Set up and use friction saw for production work	X	X				X			
760E018	Set up and use rubber disk saw for production work	X	X				X			
760E019	Use and maintain coolant system for sawing	X	X	X			X			
760E020	Perform basic saw maintenance	X	X	X			X			
760E021	Plan sequence of sawing operations		X	X			X			

OPERATING DRILLING MACHINES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760F001	Select drills using drill chart	X	X	X		X	X			
760F002	Use and maintain coolant system for drilling	X	X	X		X	X			
760F003	Change drills and tool holders	X	X	X		X	X			
760F004	Calculate and set drilling speeds, feeds and depth of cut		X	X		X	X			
760F005	Align workpiece, jigs and fixtures with drill spindle		X	X						
760F006	Align tools with drill guide bushings	X	X	X						
760F007	Center drill and drill holes to size	X	X	X		X	X			
760F008	Countersink, counterbore and spot face parts to specifications	X	X	X						
760F009	Drill blind holes to specifications	X	X	X						
760F010	Drill deep holes to specifications	X	X	X						
760F011	Drill holes to specifications using special drills	X	X	X						
760F012	Thread parts using tapping attachment	X	X	X						
760F013	Ream holes to size	X	X	X						
760F014	Burnish parts to specifications	X	X	X						
760F015	Drill holes at angle by tilting head or table	X	X	X						
760F016	Position spindle over hole location by swinging radial arm		X	X						
760F017	Sharpen drills		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760F018	Perform basic drilling machine maintenance	X	X	X		X	X			
760F019	Plan sequence of drilling operations		X	X		X	X			
760F020	Set up drill press		X	X		X	X			
760F021	Set up radial drill to drill large workpieces		X	X						
760F022	Set up precision drills		X	X						
760F023	Set up special drilling machines		X	X						

OPERATING BENCH GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760G001	Change and dress bench grinding wheels	X	X	X		X	X			
760G002	Sharpen and recondition hand tools	X	X	X		X	X			
760G003	Grind lathe turning tools		X	X						
760G004	Grind lathe form tools		X	X						
760G005	Grind lathe threading tools		X	X						
760G006	Grind lathe cut-off tools		X	X						
760G007	Grind lathe boring tools		X	X						
760G008	Sharpen carbide tools		X	X						
760G009	Rough grind materials					X	X			
760G010	Perform basic bench grinder maintenance	X	X	X		X	X			

OPERATING LATHES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760H001	Calculate and set lathe speeds, feeds and depth of cut		X	X						
760H002	Use and maintain coolant system on lathe	X	X	X						
760H003	Face and turn parts in 3-jaw chuck	X	X	X						
760H004	Machine parts between centers	X	X	X						
760H005	Indicate and machine parts in 4-jaw chuck	X	X	X						
760H006	Machine parts using collet chucks	X	X	X						
760H007	Machine parts using faceplate	X	X	X						
760H008	Perform forming operations	X	X	X						
760H009	Perform knurling operations	X	X	X						
760H010	Center drill and drill parts	X	X	X						
760H011	Bore, face and recess internal diameters	X	X	X						
760H012	Ream holes to specifications	X	X	X						
760H013	Undercut diameters and shoulders	X	X	X						
760H014	Machine eccentric diameters	X	X	X						
760H015	Manufacture springs	X	X	X						
760H016	Cut off parts	X	X	X						
760H017	Align lathe centers		X	X						
760H018	Calculate tapers		X	X						
760H019	Turn tapers	X	X	X						
760H020	Machine internal tapers	X	X	X						
760H021	Thread external diameters	X	X	X						
760H022	Thread internal diameters	X	X	X						
760H023	Repair threads	X	X	X						
760H024	Cut special thread forms		X	X						
760H025	Hold dimensions using feed, precision and indicator stops on lathe	X	X	X						
760H026	Hold dimensions using digital readout on lathe	X	X	X						
760H027	Machine parts using carbide tooling	X	X	X						
760H028	Machine parts using ceramic tooling	X	X	X						
760H029	Machine parts using steady rest	X	X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760H030	Machine long parts using follower rest	X	X	X						
760H031	Machine parts using jigs and fixtures	X	X	X						
760H032	Machine radii	X	X	X						
760H033	Duplicate parts using tracing attachment	X	X	X						
760H034	Grind parts using tool post grinder	X	X	X						
760H035	Machine parts using quick change tooling system	X	X	X						
760H036	Identify machining problems, determine causes and correct problems		X	X						
760H037	Perform basic lathe maintenance	X	X	X						
760H038	Plan sequence of lathe operations		X	X						
760H039	Set up engine lathe		X	X						
760H040	Set up high speed lathe for secondary operations		X	X						
760H041	Set up bar turret lathe for production work		X							
760H042	Set up chucking lathe for production work		X							

OPERATING VERTICAL MILLING MACHINES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760I001	Calculate and set speeds, feeds and depth of cut for vertical mill		X	X						
760I002	Align the vertical milling machine head		X	X						
760I003	Align workpiece, work holding devices, jigs and fixtures on vertical mill		X	X						
760I004	Use and maintain coolant system on milling machine	X	X	X						
760I005	Change tool holders and cutters on vertical mill		X	X						
760I006	Establish zero reference point on workpiece to be machined		X	X						
760I007	Hold dimensions using table and precision stops on vertical mill	X	X	X						
760I008	Hold dimensions using digital readout on vertical mill	X	X	X						
760I009	Machine parts using end milling cutters on vertical mill	X	X	X						
760I010	Machine parts using carbide milling cutters on vertical mill	X	X	X						
760I011	Machine parts using ceramic milling cutters on vertical mill	X	X	X						
760I012	Machine parts using conventional and climb milling on vertical mill	X	X	X						
760I013	Machine parts square on vertical mill	X	X	X						
760I014	Machine closed pockets on vertical mill	X	X	X						
760I015	Machine angles on vertical mill	X	X	X						
760I016	Machine radii using form milling cutter on vertical mill	X	X	X						
760I017	Machine keyways on vertical mill	X	X	X						
760I018	Machine "T" slots on vertical mill	X	X	X						
760I019	Machine dovetails on vertical mill	X	X	X						
760I020	Center drill, drill and ream holes on vertical mill	X	X	X						
760I021	Tap holes on vertical mill	X	X	X						
760I022	Bore, face and recess diameters using boring head	X	X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760I023	Set up and use jigs and fixtures on vertical mill	X	X	X						
760I024	Solve indexing problems		X	X						
760I025	Mill multiple surfaces using indexing fixture on vertical mill	X	X	X						
760I026	Mill multiple surfaces using dividing head on vertical mill	X	X	X						
760I027	Mill radii using rotary table	X	X	X						
760I028	Drill hole patterns using rotary table	X	X	X						
760I029	Mill angles using rotary table	X	X	X						
760I030	Duplicate contours using tracing attachment	X	X	X						
760I031	Identify milling problems, determine causes and correct problems		X	X						
760I032	Perform basic vertical milling machine maintenance	X	X	X						
760I033	Plan sequence of vertical milling operations		X	X						
760I034	Set up vertical milling machine for manual operations		X	X						
760I035	Set up vertical milling machine for automatic operations		X	X						

OPERATING HORIZONTAL MILLING MACHINES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760J001	Calculate and set milling speeds, feeds and depth of cut for horizontal mill		X	X						
760J002	Align workpiece, work holding devices, jigs and fixtures on horizontal mill		X	X						
760J003	Change arbors and cutters on horizontal mill		X	X						
760J004	Hold dimensions using table and precision stops on horizontal mill	X	X	X						
760J005	Hold dimensions using digital readouts on horizontal mill	X	X	X						
760J006	Machine parts using conventional and climb milling on horizontal mill	X	X	X						
760J007	Machine parts using carbide insert cutters on horizontal mill	X	X	X						
760J008	Machine parts using ceramic cutting tools on horizontal mill	X	X	X						
760J009	Perform slab milling	X	X	X						
760J010	Perform gang milling	X	X	X						
760J011	Perform straddle milling	X	X	X						
760J012	Mill parts square using horizontal mill	X	X	X						
760J013	Mill angles on horizontal mill	X	X	X						
760J014	Machine keyways on horizontal mill	X	X	X						
760J015	Machine deep slots on horizontal mill	X	X	X						
760J016	Cut off parts using horizontal mill	X	X	X						
760J017	Perform gear calculations		X	X						
760J018	Machine gears on horizontal mill using dividing head	X	X	X						
760J019	Machine splines on horizontal mill using dividing head	X	X	X						
760J020	Machine rack on horizontal mill	X	X	X						
760J021	Machine multiple surfaces using indexing fixture on horizontal mill	X	X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760J022	Perform basic horizontal milling machine maintenance	X	X	X						
760J023	Plan sequence of horizontal milling operations		X	X						
760J024	Set up horizontal milling machine for manual operations		X	X						
760J025	Set up horizontal milling machine for automatic operations		X	X						

OPERATING BORING MACHINES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760K001	Calculate and set speeds, feeds and depth of cut on boring machine		X	X						
760K002	Align workpiece, work holding devices, jigs and fixtures on boring machine		X	X						
760K003	Use and maintain coolant system on boring machine	X	X	X						
760K004	Change cutters and tool holders on boring machine		X	X						
760K005	Hold dimensions using table and precision stops on boring machine	X	X	X						
760K006	Hold dimensions using digital readout on boring machine	X	X	X						
760K007	Establish zero reference point on workpiece		X	X						
760K008	Center drill, drill and ream holes on boring machine	X	X	X						
760K009	Countersink, counterbore and spot face holes on boring machine	X	X	X						
760K010	Tap holes on boring machine	X	X	X						
760K011	Bore, face and recess internal surfaces on boring machine	X	X	X						
760K012	Machine external surfaces on boring machine	X	X	X						
760K013	Identify boring machine problems, determine causes and solve problems		X	X						
760K014	Perform basic boring machine maintenance	X	X	X						
760K015	Plan sequence of boring machine operations		X	X						
760K016	Set up boring machine for manual operations		X	X						
760K017	Set up boring machine for automatic operations		X	X						

OPERATING SURFACE GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760L001	Select grinding wheel using manufacturers' wheel data charts		X	X						
760L002	Inspect, mount and dress surface grinding wheels		X	X						
760L003	Calculate and set surface grinding feeds and depth of cut		X	X						
760L004	Maintain grinding coolant system	X	X	X						
760L005	Grind parallel surfaces on surface grinder	X	X	X						
760L006	Grind parts square on surface grinder	X	X	X						
760L007	Grind vertical surface on surface grinder	X	X	X						
760L008	Grind angles on surface grinder	X	X	X						
760L009	Grind radii on surface grinder	X	X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760L010	Grind profiles on surface grinder	X	X	X						
760L011	Remove warp using surface grinder	X	X	X						
760L012	Cut off parts on surface grinder	X	X	X						
760L013	Inspect ground parts	X	X	X						
760L014	Perform basic surface grinder maintenance	X	X	X						
760L015	Plan sequence of surface grinder operations		X	X						
760L016	Set up surface grinder for manual operations		X	X						
760L017	Set up surface grinder for automatic operations		X	X						

OPERATING INSIDE DIAMETER (I.D.) GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760M001	Inspect, mount and dress I.D. grinding wheels		X	X						
760M002	Calculate and set I.D. grinding speeds, feeds and depth of cut		X	X						
760M003	Parallel grind inside diameters	X	X	X						
760M004	Grind to internal shoulder	X	X	X						
760M005	Grind internal taper	X	X	X						
760M006	Grind internal radius	X	X	X						
760M007	Grind internal recess	X	X	X						
760M008	Grind internal angle	X	X	X						
760M009	Face grind internal shoulder	X	X	X						
760M010	Grind blind hole	X	X	X						
760M011	Grind through parts	X	X	X						
760M012	Inspect inside diameters of ground parts	X	X	X						
760M013	Perform basic I.D. grinder maintenance	X	X	X						
760M014	Plan sequence of I.D. grinder operations		X	X						
760M015	Set up I.D. grinder for manual operations		X	X						
760M016	Set up I.D. grinder for automatic operations		X	X						

OPERATING OUTSIDE DIAMETER (O.D.) GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760N001	Inspect, mount and dress O.D. grinding wheels		X	X						
760N002	Calculate and set O.D. grinding speeds, feeds and depth of cut		X	X						
760N003	Align O.D. grinder head, table and fixtures		X	X						
760N004	Parallel grind outside diameters on O.D. grinder	X	X	X						
760N005	Grind to external shoulder on O.D. grinder	X	X	X						
760N006	Grind external taper on O.D. grinder	X	X	X						
760N007	Grind external radius on O.D. grinder	X	X	X						
760N008	Grind external angle on O.D. grinder	X	X	X						
760N009	Plunge grind external diameter on O.D. grinder	X	X	X						
760N010	Grind parts between centers	X	X	X						
760N011	Grind parts using collet chucks	X	X	X						
760N012	Grind parts using other work holding devices	X	X	X						
760N013	Grind parts using steady rest	X	X	X						
760N014	Grind parts using follower rest	X	X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760N015	Grind complex profile on O.D. grinder	X	X	X						
760N016	Inspect outside diameters of parts ground on O.D. grinder	X	X	X						
760N017	Perform basic O.D. grinder maintenance	X	X	X						
760N018	Plan sequence of O.D. grinder operations		X	X						
760N019	Set up O.D. grinder for manual operations		X	X						
760N020	Set up O.D. grinder for automatic operations		X	X						

OPERATING CENTERLESS GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
7600001	Inspect, mount and balance centerless grinding wheels		X	X						
7600002	Dress centerless grinding wheels and regulating wheels		X	X						
7600003	Calculate and set centerless grinding speeds, feeds and depth of cut		X	X						
7600004	Parallel grind outside diameters on centerless grinder	X	X	X						
7600005	Grind to external shoulder on centerless grinder	X	X	X						
7600006	Grind external taper on centerless grinder	X	X	X						
7600007	Grind external radius on centerless grinder	X	X	X						
7600008	Grind external angle on centerless grinder	X	X	X						
7600009	Plunge grind external diameter on centerless grinder	X	X	X						
7600010	Plunge grind complex profile on centerless grinder		X	X						
7600011	Inspect outside diameters of parts ground on centerless grinder	X	X	X						
7600012	Perform basic centerless grinder maintenance	X	X	X						
7600013	Plan sequence of centerless grinder operations		X	X						
7600014	Set up centerless grinder		X	X						

OPERATING TOOL AND CUTTER GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760P001	Select, inspect, mount and dress wheels on tool and cutter grinder		X	X						
760P002	Align workhead and work holding devices on tool and cutter grinder		X	X						
760P003	Calculate and set speeds, feeds and depth of cut on tool and cutter grinder		X	X						
760P004	Grind plain milling cutters		X	X						
760P005	Grind staggered tooth milling cutters		X	X						
760P006	Grind form relieved milling cutters		X	X						
760P007	Grind end mills		X	X						
760P008	Grind helical milling cutters		X	X						
760P009	Grind angular milling cutters		X	X						
760P010	Sharpen drills		X	X						
760P011	Grind step drills		X	X						
760P012	Grind straight reamers		X	X						
760P013	Grind tapered reamers		X	X						
760P014	Grind taps		X	X						
760P015	Grind set of thread chasers		X	X						
760P016	Grind boring bars		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760P017	Grind lathe turning tools		X	X						
760P018	Grind lathe form tools		X	X						
760P019	Grind complex profiles		X	X						
760P020	Grind carbide tools and cutters		X	X						
760P021	Inspect cutter clearance angles		X	X						
760P022	Identify grinding problems, determine causes and solve problems		X	X						
760P023	Perform basic tool and cutter grinder maintenance		X	X						
760P024	Plan sequence of tool and cutter grinder operations		X	X						
760P025	Set up tool and cutter grinder for manual operations		X	X						
760P026	Set up tool and cutter grinder for automatic operations		X	X						

OPERATING JIG GRINDERS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760Q001	Select, inspect, mount and dress wheels on jig grinder			X						
760Q002	Calculate and set speeds, feeds and depth of cut on jig grinder			X						
760Q003	Set diameter of planetary action			X						
760Q004	Set limits of automatic reciprocating wheel feed			X						
760Q005	Establish zero reference point on workpiece			X						
760Q006	Indicate work under spindle center on jig grinder			X						
760Q007	Grind holes on jig grinder			X						
760Q008	Grind contours on jig grinder			X						
760Q009	Set spindle angle for taper grinding			X						
760Q010	Grind tapers on jig grinder			X						
760Q011	Perform basic jig grinder maintenance			X						
760Q012	Plan sequence of jig grinder operations			X						
760Q013	Set up jig grinder			X						

OPERATING ELECTRICAL DISCHARGE MACHINES (EDM)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760R001	Machine EDM electrodes to job specifications		X	X						
760R002	Mount EDM electrodes in holder		X	X						
760R003	Position workpiece on table or fixture		X	X						
760R004	Align work and check for clearance		X	X						
760R005	Calculate and set feed rate and depth of cut		X	X						
760R006	Select electrical discharge circuit		X	X						
760R007	Select method for using dilective fluid		X	X						
760R008	Perform internal rough and finish cuts	X	X	X						
760R009	Perform external rough and finish cuts	X	X	X						
760R010	Perform profile rough and finish cuts	X	X	X						
760R011	Perform repair work	X	X	X						
760R012	Inspect parts machined with EDM	X	X	X						
760R013	Identify EDM problems, determine the causes and solve the problem		X	X						
760R014	Perform basic EDM maintenance	X	X	X						
760R015	Plan sequence of EDM operations		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760R016	Set up wire EDM machine		X	X						
760R017	Set up electrical discharge machine		X	X						
760R018	Set up and operate portable EDM machine		X	X						
SELECTING MATERIALS										
760S001	Interpret color codes, numbering systems and classification systems of materials (ie. AISI, SAE)		X	X		X	X	X	X	
760S002	Select material for job		X	X	X	X	X	X	X	
760S003	Identify metals using spark test		X	X			X		X	
760S004	Identify metals using variety of tests		X	X					X	
760S005	Identify materials		X	X	X	X	X	X	X	
PERFORMING HEAT TREATMENT OF METALS										
760T001	Test hardness of metals		X	X						
760T002	Perform non-destructive testing		X	X						
760T003	Perform destructive testing		X	X						
760T004	Harden metals to job specifications		X	X			X			
760T005	Temper metals to job specifications		X	X			X			
760T006	Anneal metals to job specifications		X	X			X			
760T007	Normalize metals to job specifications		X	X			X			
760T008	Case harden metals to job specifications		X	X			X			
760T009	Preheat and post-heat metals to control distortion/warpage during welding						X			
PERFORMING HOUSEKEEPING AND RECORDKEEPING ACTIVITIES										
760U001	Dispose of scrap metal chips, shavings, trash and waste	X	X	X	X	X	X	X		
760U002	Clean and maintain work area and leave in safe condition	X	X	X	X	X	X	X	X	
760U003	Clean and store hand tools, cutters, fixtures, jigs and attachments	X	X	X	X	X	X	X	X	
760U004	Store grinding wheels	X	X	X				X		
760U005	Follow tool crib procedures	X	X	X	X	X	X	X	X	
760U006	Inspect and remove, replace or adjust machine guards	X	X	X	X		X	X		
760U007	Scrape and paint machines	X	X		X			X		
760U008	Report problems to supervisor	X	X	X	X	X	X	X	X	
760U009	Complete time cards	X	X	X	X	X	X	X	X	
760U010	Complete job status reports	X	X	X	X	X	X	X	X	
760U011	Make equipment failure reports	X	X	X	X	X	X	X	X	
760U012	Record preventive maintenance activities			X				X	X	
760U013	Record repair activities			X				X	X	
760U014	Read job orders and process sheets to determine tooling and set up information		X	X	X		X	X	X	
760U015	Determine basic maintenance procedures using manuals	X	X	X	X	X	X	X	X	
760U016	Participate in participative management program (Quality Circles)	X	X	X	X	X	X	X	X	

PERFORMING SUPERVISORY FUNCTIONS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760V001	Determine availability of machines, supplies and materials		X	X	X	X		X	X	
760V002	Requisition, schedule and distribute supplies and materials		X	X		X		X	X	
760V003	Select most productive machine tool and tooling for job		X	X	X	X		X	X	
760V004	Coordinate workers with work to be done		X	X	X	X		X	X	
760V005	Write work schedules		X	X	X	X		X	X	
760V006	Schedule and control shop flow of jobs		X	X	X	X		X	X	
760V007	Maintain files		X	X	X	X		X	X	
760V008	Maintain production records		X	X	X	X		X	X	
760V009	Maintain labor records		X	X	X	X		X	X	
760V010	Maintain warranty records			X				X	X	
760V011	Review job orders, process sheets and blueprint specifications		X	X	X	X		X	X	
760V012	Issue blueprints, job orders, process sheets and tooling		X	X	X	X		X	X	
760V013	Explain work requirements		X	X	X	X		X	X	
760V014	Write production and progress reports		X	X	X	X		X	X	
760V015	Write technical reports		X	X	X	X		X	X	
760V016	Inventory supplies and equipment		X	X	X	X		X	X	
760V017	Maintain charts, tables, graphs or status boards on work scheduled		X	X	X	X		X	X	
760V018	Submit parts for first piece inspection		X	X	X				X	
760V019	Conduct in-process inspections		X	X	X				X	
760V020	Monitor reports of discrepancy or rejects during production process		X	X	X				X	
760V021	Follow up on end product quality control standards		X	X	X				X	
760V022	Initiate engineering change notices and rejection reports		X	X	X			X	X	
760V023	Write requests for deviation to specifications		X	X	X			X	X	
760V024	Check job/time cards		X	X	X	X		X	X	
760V025	Supervise machine use		X	X	X			X	X	
760V026	Inspect shop equipment and arrange for maintenance and repair work		X	X	X	X		X	X	
760V027	Prepare preventive maintenance schedule							X	X	
760V028	Evaluate preventive maintenance program							X	X	
760V029	Coordinate maintenance and repair of shop equipment		X	X	X	X		X	X	
760V030	Prepare repair schedule							X	X	
760V031	Observe maintenance and repair activities							X	X	
760V032	Evaluate repair activities							X	X	
760V033	Plan and implement technical training for employees		X	X	X	X		X	X	
760V034	Train employees to operate mechanical devices		X	X	X	X		X	X	
760V035	Evaluate employee progress and performance		X	X	X	X		X	X	
760V036	Follow up employee reports of problems or equipment failures		X	X	X	X		X	X	
760V037	Interview job applicants		X	X				X	X	
760V038	Hire workers		X	X						
760V039	Dismiss employees		X	X	X					
760V040	Determine work to be done by outside firm		X	X						
760V041	Write contract for work with outside firm		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760V042	Conduct meetings		X	X					X	
760V043	Estimate cost of equipment installation							X	X	
760V044	Estimate cost of system installation							X	X	
760V045	Estimate cost of repairs and downtime							X	X	
760V046	Supervise assembly operations								X	

SETTING UP NUMERICAL CONTROL/COMPUTER NUMERICAL CONTROL (NC/CNC) MACHINES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760W001	Read job orders and process sheets to determine tooling and setup information		X	X						
760W002	Mount work holding device		X	X						
760W003	Install cutting tools in holders		X	X						
760W004	Mount holder and tool on spindle		X	X						
760W005	Insert tools and holders in machine magazine		X	X						
760W006	Load tools in tool drum		X	X						
760W007	Load automatic tool changer		X	X						
760W008	Load tools in turret		X	X						
760W009	Operate drawbar		X	X						
760W010	Dial cutter compensation		X	X						
760W011	Mount workpiece		X	X						
760W012	Position and secure stock in work holding device		X	X						
760W013	Place control tape in reader of control console		X	X						
760W014	Load program in computer		X	X						
760W015	Index cutting tool to zero point		X	X						
760W016	Set controls to operating position and start machine		X	X						
760W017	Dry run machine with machine locked		X	X						
760W018	Run machine in manual/jog mode to verify cutter path		X	X						
760W019	Machine first piece to verify accuracy of setup		X	X						
760W020	Machine first piece to verify accuracy of program		X	X						
760W021	Change cutting tools		X	X						
760W022	Change location of clamps or fixtures		X	X						
760W023	Reposition stock on fixture		X	X						
760W024	Observe machine operation		X	X						
760W025	Verify accuracy of machined workpiece		X	X						
760W026	Adjust speeds and feeds for maximum output		X	X						
760W027	Identify programming errors		X	X						
760W028	Update programs stored in bubble memory		X	X						
760W029	Notify supervisor of program errors		X	X						
760W030	Identify machine malfunctions		X	X						
760W031	Correct minor machine malfunctions		X	X						
760W032	Notify supervisor of machine malfunctions		X	X						
760W033	Verify workpiece detail identification number		X	X						
760W034	Verify type of material of workpiece		X	X						
760W035	Notify supervisor of discrepancies in parts		X	X						
760W036	Complete machine tool safety setup		X	X						
760W037	Establish tolerance requirement		X	X						
760W038	Inspect first piece to verify setup		X	X						

OPERATING NUMERICAL CONTROL/COMPUTER NUMERICAL CONTROL (NC/CNC) MACHINES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760X001	Turn on/off power		X	X						
760X002	Call up program in distributed numerical control		X	X						
760X003	Place tape in reader		X	X						
760X004	Key in program on machine		X	X						
760X005	Align holding device with machine axis		X	X						
760X006	Clamp dial indicator to tool holder		X	X						
760X007	Change tool holder		X	X						
760X008	Change or replace cutting tool		X	X						
760X009	Adjust tool offset manually		X	X						
760X010	Interpret operator related messages on screen		X	X						
760X011	Control spindle speed override		X	X						
760X012	Control feedrate override		X	X						
760X013	Activate automatic cycle mode		X	X						
760X014	Interrupt automatic cycle mode manually		X	X						
760X015	Set manual mode control		X	X						
760X016	Select cycle modifiers		X	X						
760X017	Select manual feed/jog mode		X	X						
760X018	Adjust cutter compensation		X	X						
760X019	Edit program		X	X						
760X020	Run segment of program		X	X						
760X021	Perform sequence search		X	X						
760X022	Interpret status lights		X	X						
760X023	Change spindle speed		X	X						
760X024	Initiate program restart from zero		X	X						
760X025	Interrupt cycle		X	X						
760X026	Check cutting fluids		X	X						
760X027	Check surface finish		X	X						
760X028	Check cut dimension		X	X						
760X029	Index turret		X	X						
760X030	Differentiate between machine controls		X	X						
760X031	Set cycle dwell		X	X						
760X032	Modify manual data input program		X	X						
760X033	Adjust depth of cut		X	X						
760X034	Reset tool cycle time		X	X						
760X035	Execute emergency stop		X	X						
760X036	Perform milling operations on NC/CNC machine		X	X						
760X037	Perform drilling operations on NC/CNC machine		X	X						
760X038	Perform boring operations on NC/CNC machine		X	X						
760X039	Perform reaming operations on NC/CNC machine		X	X						
760X040	Perform broaching operations on NC/CNC machine		X	X						
760X041	Perform turning operations on NC/CNC machine		X	X						
760X042	Perform forming operations on NC/CNC machine		X	X						
760X043	Perform punching operations on NC/CNC machine		X	X						
760X044	Perform welding operations with NC/CNC machine		X	X						

		MT	M	TD	PP	SM	CW	MR	AM	TP
760X045	Perform painting operations with NC/CNC machine		X	X						
760X046	Perform assembly operations with NC/CNC machine		X	X						

SETTING UP MANUAL PUNCH PRESSES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760Y001	Strip press of previous tooling				X					
760Y002	Clean press				X					
760Y003	Review setup sheet and specifications				X					
760Y004	Set up die for change over				X					
760Y005	Install die in press				X					
760Y006	Align die in press				X					
760Y007	Bolt die in press				X					
760Y008	Adjust ram stroke to specifications				X					
760Y009	Mount and align fixtures to press				X					
760Y010	Set material stops				X					
760Y011	Set up air ejectors				X					
760Y012	Inspect and replace guards				X					
760Y013	Set controls to operating position and start press				X					
760Y014	Run press in manual/jog mode to verify clearances				X					
760Y015	Position workpiece in press				X					
760Y016	Adjust workpiece stops and supports				X					
760Y017	Position parts containers				X					
760Y018	Position scrap containers				X					
760Y019	Run first piece to verify setup and conformance to specifications				X					
760Y020	Make necessary adjustments to correct errors				X					
760Y021	Give operator instructions				X					

OPERATING MANUAL PUNCH PRESSES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760Z001	Place workpiece against stops				X					
760Z002	Place workpiece in fixture				X					
760Z003	Place workpiece in die				X					
760Z004	Operate press				X					
760Z005	Remove part				X					
760Z006	Remove scrap materials				X					
760Z007	Load and move parts containers				X					
760Z008	Count and label parts				X					

SETTING UP AND OPERATING AUTOMATIC PUNCH PRESSES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AA001	Strip press of previous tooling				X					
760AA002	Clean press				X					
760AA003	Review setup sheet and specifications				X					
760AA004	Install die in press				X					
760AA005	Align die in press				X					
760AA006	Bolt die in press				X					
760AA007	Adjust ram stroke to specifications				X					
760AA008	Mount and align fixtures to press				X					
760AA009	Set material stops				X					
760AA010	Mount form slides				X					

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AA011	Set cams				X					
760AA012	Set up air ejectors				X					
760AA013	Inspect and replace guards				X					
760AA014	Set controls to operating position and start press				X					
760AA015	Run press in manual/jog mode to verify clearances				X					
760AA016	Install parts chutes				X					
760AA017	Position parts containers				X					
760AA018	Position scrap containers				X					
760AA019	Run first piece to verify setup and conformance to specifications				X					
760AA020	Make necessary adjustments to correct errors				X					
760AA021	Start run				X					
760AA022	Input control panel data				X					
760AA023	Monitor control panel data				X					
760AA024	Interpret control panel data				X					

FASTENING AND/OR JOINING SHEET METAL

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AB001	Rivet sheet metal with tinners rivets					X				
760AB002	Rivet sheet metal with pop rivets					X				
760AB003	Fasten materials using sheet metal screws					X				

FABRICATING SHEET METAL

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AC001	Construct single hem					X				
760AC002	Construct double hem					X				
760AC003	Construct single lap seam					X				
760AC004	Construct double lap seam					X				
760AC005	Construct standing seam (air duct connections)					X				
760AC006	Construct Pittsburgh lock seam					X				
760AC007	Construct grooved seam					X				
760AC008	Construct drive clip (air duct connection)					X				
760AC009	Construct S-cleat (air duct connection)					X				
760AC010	Fabricate rectangular straight duct					X				
760AC011	Fabricate rectangular radius throat and radius heel duct elbow					X				
760AC012	Fabricate rectangular square throat and square heel duct elbow					X				
760AC013	Fabricate rectangular duct ogee offset					X				
760AC014	Fabricate rectangular duct transition					X				
760AC015	Fabricate rectangular shoe tap					X				
760AC016	Fabricate round straight duct					X				
760AC017	Fabricate round duct elbow					X				
760AC018	Fabricate round duct offset					X				
760AC019	Fabricate round duct taper (transition)					X				
760AC020	Fabricate single wall equipment casing/housing					X				
760AC021	Fabricate double wall equipment casing/housing					X				
760AC022	Fabricate companion angle					X				
760AC023	Fabricate flanged duct section					X				

FABRICATING ARCHITECTURAL/ROOFING SHEET METAL

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AD001	Fabricate ogee gutter					X				
760AD002	Fabricate flashing					X				
760AD003	Fabricate roof coping					X				
760AD004	Fabricate gravel stop fascia					X				
760AD005	Fabricate metal siding panel					X				
760AD006	Fabricate column cover					X				
760AD007	Fabricate metal ceiling panel					X				

FABRICATING SPECIALTY SHEET METAL

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AE001	Fabricate rectangular single blade damper in frame					X				
760AE002	Fabricate rectangular multi-blade damper in frame					X				
760AE003	Fabricate rectangular tube					X				
760AE004	Fabricate round tube					X				
760AE005	Fabricate belt guard					X				
760AE006	Fabricate breeching					X				
760AE007	Fabricate rectangular fiberglass duct					X				
760AE008	Fabricate lagging for insulated breeching					X				

FABRICATING FOOD AND BEVERAGE DISPENSING EQUIPMENT

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AF001	Fabricate sink					X				
760AF002	Fabricate shelf					X				
760AF003	Fabricate cabinet shell					X				
760AF004	Fabricate cabinet drawer					X				
760AF005	Fabricate cabinet sliding door					X				
760AF006	Fabricate cabinet hinge door					X				
760AF007	Assemble cabinet components					X				
760AF008	Fabricate range hood					X				

INSTALLING SHEET METAL SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AG001	Install rectangular duct system					X				
760AG002	Install round duct system					X				
760AG003	Install single wall equipment casing/ housing					X				
760AG004	Install double wall equipment casing/ housing					X				
760AG005	Install breeching					X				
760AG006	Install belt guards					X				
760AG007	Install ogee gutter					X				
760AG008	Install flashing					X				
760AG009	Install coping					X				
760AG010	Install gravel stop fascia					X				
760AG011	Install louver					X				

PERFORMING OXY-FUEL WELDING (OAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AH001	Select oxy-fuel welding (OAW) gas and filler metal according to job					X	X			
760AH002	Change cylinders and adjust oxy-fuel manifold					X	X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AH003	Set up portable oxy-acetylene welding equipment					X	X			
760AH004	Perform minor maintenance on oxy-acetylene welding equipment (OAW)					X	X			
760AH005	Weld 1/8" mild steel in flat position (1F,1G)						X			
760AH006	Weld 1/8" mild steel in horizontal position (2F,2G)						X			
760AH007	Weld 1/8" mild steel in vertical position (3F,3G)						X			
760AH008	Weld 1/8" mild steel in overhead position (4F,4G)						X			
760AH009	Braze ferrous metals					X	X			
760AH010	Braze non-ferrous metals					X	X			
760AH011	Silver braze ferrous metals						X			
760AH012	Silver braze non-ferrous metals						X			
760AH013	Heat and bend metal to specifications						X			
760AH014	Heat metal parts to assist in removal						X			
760AH015	Build up surfaces						X			
760AH016	Hard face surfaces						X			
760AH017	Solder copper					X				
760AH018	Solder stainless steel					X				
760AH019	Solder materials					X				

PERFORMING THERMAL CUTTING OPERATIONS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AI001	Set up portable oxy-fuel cutting equipment						X			
760AI002	Cut steel by hand using oxy-fuel cutting equipment						X			
760AI003	Cut cast iron by hand using oxy-fuel cutting equipment						X			
760AI004	Cut steel with trackcutter using oxy-fuel cutting equipment						X			
760AI005	Cut steel with pipecutter using oxy-fuel cutting equipment						X			
760AI006	Set up pattern cutter						X			
760AI007	Cut steel with single torch pattern cutter						X			
760AI008	Cut steel with multiple torch pattern cutter						X			
760AI009	Set up automatic shape cutter with photocell						X			
760AI010	Cut steel with single torch automatic shape cutter with photocell						X			
760AI011	Cut steel with multiple torch automatic shape cutter with photocell						X			
760AI012	Set up and cut shapes with digital controlled shape cutter (with tape)						X			
760AI013	Set up and cut shapes with digital controlled shape cutter (without tape)						X			
760AI014	Cut and pierce metal with shielded metal arc welding equipment (SMAW)						X			
760AI015	Set up air carbon arc equipment						X			
760AI016	Cut carbon steel with air carbon arc equipment						X			
760AI017	Cut stainless steel with air carbon arc equipment						X			
760AI018	Cut aluminum with air carbon arc equipment						X			
760AI019	Set up plasma arc cutting equipment (PAC)						X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AI020	Cut metals by hand using plasma arc cutting equipment (PAC)						X			
760AI021	Cut metals automatically using plasma arc cutting equipment (PAC)						X			

PERFORMING SHIELDED METAL ARC WELDING (SMAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AJ001	Select shielded metal arc welding (SMAW) equipment and electrodes according to job					X	X			
760AJ002	Set up shielded metal arc welding equipment					X	X			
760AJ003	Perform minor maintenance on shielded metal arc welding equipment					X	X			
760AJ004	Weld 3/16" mild steel in flat position (1F,1G)					X	X			
760AJ005	Weld 3/16" mild steel in horizontal position (2F,2G)					X	X			
760AJ006	Weld 3/16" mild steel in vertical up/down positions (3F,3G)					X	X			
760AJ007	Weld 3/16" mild steel in overhead position (4F,4G)						X			
760AJ008	Weld single vee-groove butt joint on 3/8" steel plate (1G,4G)						X			
760AJ009	Weld double vee-groove butt joint on 1" steel plate (1G,4G)						X			
760AJ010	Weld 8" schedule 40 steel pipe in 1G position						X			
760AJ011	Weld 8" schedule 40 steel pipe in 2G position						X			
760AJ012	Weld 8" schedule 40 steel pipe in 5G position						X			
760AJ013	Weld 8" schedule 40 steel pipe in 6G position						X			
760AJ014	Weld 8" schedule 60 steel pipe in 1G position						X			
760AJ015	Weld 8" schedule 60 steel pipe in 2G position						X			
760AJ016	Weld 8" schedule 60 steel pipe in 5G position						X			
760AJ017	Weld 8" schedule 60 steel pipe in 6G position						X			
760AJ018	Weld 8" schedule 60 steel pipe in 1F position						X			
760AJ019	Weld 8" schedule 60 steel pipe in 2F position						X			
760AJ020	Weld 8" schedule 60 steel pipe in 2FR position						X			
760AJ021	Weld 8" schedule 60 steel pipe in 4F position						X			
760AJ022	Weld 8" schedule 60 steel pipe in 5F position						X			
760AJ023	Weld 8" schedule 40S stainless steel pipe in 6G position						X			
760AJ024	Perform stud welding using Nelson method (electric arc/flux/ferrule)						X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AJ025	Weld stainless steel with shielded metal arc welding equipment (SMAW)					X	X			

PERFORMING GAS METAL ARC WELDING (GMAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AK001	Select gas metal arc welding (GMAW) equipment, filler metal and gases according to job					X	X			
760AK002	Set up gas metal arc welding equipment					X	X			
760AK003	Perform minor maintenance on gas metal arc welding equipment					X	X			
760AK004	Weld 3/16" mild steel in flat position (1F,1G)					X	X			
760AK005	Weld 3/16" mild steel in horizontal position (2F,2G)					X	X			
760AK006	Weld 3/16" mild steel in vertical up/down positions (3F,3G)					X	X			
760AK007	Weld 3/16" mild steel in overhead position (4F,4G)						X			
760AK008	Weld single vee-groove butt joint on 3/8" steel plate (1G,4G)						X			
760AK009	Weld double vee-groove butt joint on 1" steel plate (1G,4G)						X			
760AK010	Weld 8" schedule 40 steel pipe in 1G position						X			
760AK011	Weld 8" schedule 40 steel pipe in 2G position						X			
760AK012	Weld 8" schedule 40 steel pipe in 5G position						X			
760AK013	Weld 8" schedule 40 steel pipe in 6G position						X			
760AK014	Weld 8" schedule 60 steel pipe in 1G position						X			
760AK015	Weld 8" schedule 60 steel pipe in 2G position						X			
760AK016	Weld 8" schedule 60 steel pipe in 5G position						X			
760AK017	Weld 8" schedule 60 steel pipe in 6G position						X			
760AK018	Weld 8" schedule 60 steel pipe in 1F position						X			
760AK019	Weld 8" schedule 60 steel pipe in 2F position						X			
760AK020	Weld 8" schedule 60 steel pipe in 2FR position						X			
760AK021	Weld 8" schedule 60 steel pipe in 4F position						X			
760AK022	Weld 8" schedule 60 steel pipe in 5F position						X			
760AK023	Weld 8" schedule 40S stainless steel pipe in 6G position						X			
760AK024	Weld 16 gauge stainless steel in flat position (1F,1G)					X	X			
760AK025	Weld 16 gauge stainless steel in horizontal position (2F,2G)					X	X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AK026	Weld 16 gauge stainless steel in vertical up/down positions (3F,3G)					X	X			
760AK027	Weld 16 gauge stainless steel in overhead position (4F,4G)						X			
760AK028	Weld 1/4" aluminum in flat position (1F,1G)					X	X			
760AK029	Weld 1/4" aluminum in horizontal position (2F,2G)					X	X			
760AK030	Weld 1/4" aluminum in vertical up/down positions (3F,3G)						X			
760AK031	Weld 1/4" aluminum in overhead position (4F,4G)						X			

PERFORMING GAS TUNGSTEN ARC WELDING (GTAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AL001	Select gas tungsten arc welding (GTAW) equipment, electrodes, gases and filler metal according to job					X	X			
760AL002	Set up gas tungsten arc welding equipment					X	X			
760AL003	Perform minor maintenance on gas tungsten arc welding equipment					X	X			
760AL004	Weld 1/8" mild steel in flat position (1F,1G)					X	X			
760AL005	Weld 1/8" mild steel in horizontal position (2F,2G)					X	X			
760AL006	Weld 1/8" mild steel in vertical up/down positions (3F,3G)					X	X			
760AL007	Weld 1/8" mild steel in overhead position (4F,4G)						X			
760AL008	Weld 3" schedule 40 steel pipe in 1G position						X			
760AL009	Weld 4" schedule 10 steel pipe in 6G position						X			
760AL010	Weld 8" schedule 60 steel pipe in 1G position						X			
760AL011	Weld 8" schedule 60 steel pipe in 2G position						X			
760AL012	Weld 8" schedule 60 steel pipe in 5G position						X			
760AL013	Weld 8" schedule 60 steel pipe in 6G position						X			
760AL014	Weld 8" schedule 60 steel pipe in 6G position with pulsed current						X			
760AL015	Weld 8" schedule 60 steel pipe in 5G position with Grinnell insert						X			
760AL016	Weld 8" schedule 60 steel pipe in 1F position						X			
760AL017	Weld 8" schedule 60 steel pipe in 2F position						X			
760AL018	Weld 8" schedule 60 steel pipe in 2FR position						X			
760AL019	Weld 8" schedule 60 steel pipe in 4F position						X			
760AL020	Weld 8" schedule 60 steel pipe in 5F position						X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AL021	Weld 8" schedule 40S stainless steel pipe in 6G position						X			
760AL022	Weld 16 gauge stainless steel in flat position (1F,1G)					X	X			
760AL023	Weld 16 gauge stainless steel in horizontal position (2F,2G)					X	X			
760AL024	Weld 16 gauge stainless steel in vertical up/down positions (3F,3G)						X			
760AL025	Weld 16 gauge stainless steel in overhead position (4F,4G)						X			
760AL026	Weld single vee-groove butt joint on 3/8" steel plate (1G,4G)						X			
760AL027	Weld 11 gauge aluminum in flat position (1F,1G)					X	X			
760AL028	Weld 11 gauge aluminum in horizontal position (2F,2G)					X	X			
760AL029	Weld 11 gauge aluminum in vertical up/down positions (3F,3G)					X	X			
760AL030	Weld 11 gauge aluminum in overhead position (4F,4G)						X			

PERFORMING FLUX CORE ARC WELDING (FCAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AM001	Select flux core arc welding (FCAW) equipment, gases and filler metal according to job						X			
760AM002	Set up flux core arc welding equipment						X			
760AM003	Perform minor maintenance on flux core arc welding equipment						X			
760AM004	Weld 1" steel plate, lap joint in 1F position with external shielded wire						X			
760AM005	Weld 1" steel plate, lap joint in 2F position with external shielded wire						X			
760AM006	Weld 1" steel plate, lap joint in 1F position with self shielded wire						X			
760AM007	Weld 1" steel plate, lap joint in 2F position with self shielded wire						X			
760AM008	Weld 1" steel plate, vee-groove butt joint in 1G position with external shielded wire						X			
760AM009	Weld 1" steel plate, vee-groove butt joint in 2G position with external shielded wire						X			
760AM010	Weld 1/2" steel plate, T-joint in 3G position up with external shielded wire						X			
760AM011	Weld 3/8" steel plate, vee-groove butt joint in 3G position up with external shielded wire						X			
760AM012	Weld 1/4" steel plate, T-joint in 4F position with external shielded wire						X			

PERFORMING PLASMA ARC WELDING (PAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AN001	Select plasma arc welding (PAW) equipment, gases and filler metal according to job						X			
760AN002	Set up plasma arc welding equipment						X			
760AN003	Perform minor maintenance on plasma arc welding equipment						X			

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AN004	Weld 16 gauge mild steel in flat position (1F,1G)						X			
760AN005	Weld 16 gauge mild steel in horizontal position (2F,2G)						X			
760AN006	Weld 16 gauge aluminum in flat position (1F,1G)						X			
760AN007	Weld 16 gauge aluminum in horizontal position (2F,2G)						X			
760AN008	Weld 1/8" aluminum in flat position (1F,1G)						X			
760AN009	Weld 1/8" aluminum in horizontal position (2F,2G)						X			
760AN010	Weld 22 gauge stainless steel in flat position (1F,1G)						X			
760AN011	Weld 22 gauge stainless steel in horizontal position (2F,2G)						X			
760AN012	Weld 1/8" stainless steel in flat position (1F,1G)						X			
760AN013	Weld 1/8" stainless steel in horizontal position (2F,2G)						X			

PERFORMING SUBMERGED ARC WELDING (SAW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AO001	Select submerged arc welding (SAW) equipment, filler metal and flux according to job						X			
760AO002	Set up submerged arc welding equipment						X			
760AO003	Perform minor maintenance on submerged arc welding equipment						X			
760AO004	Weld 1/8" mild steel in flat position (1G) with automatic equipment						X			
760AO005	Weld 1/4" mild steel in flat position (1F) with semi-automatic equipment						X			
760AO006	Weld 1" mild steel, vee-groove butt joint in flat position (1G) with automatic equipment						X			
760AO007	Weld 1/4" mild steel, T-joint in horizontal position (1F) with automatic equipment						X			
760AO008	Weld 1/4" mild steel, lap-joint in horizontal position (1F) with automatic equipment						X			

PERFORMING RESISTANCE WELDING

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AP001	Select resistance welding equipment according to job					X	X			
760AP002	Set up resistance welding equipment					X	X			
760AP003	Perform minor maintenance on resistance welding equipment					X	X			
760AP004	Weld materials by spot welding					X	X			
760AP005	Weld materials by projection welding						X			
760AP006	Weld materials by flash welding						X			
760AP007	Weld materials by seam welding						X			
760AP008	Weld materials by pulsation welding						X			
760AP009	Weld materials by butt welding						X			

PERFORMING ELECTROSLAG WELDING (ESW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AQ001	Select electroslag welding (ESW) equipment, filler metal and flux according to job						X			
760AQ002	Set up electroslag welding equipment						X			
760AQ003	Weld materials using electroslag welding process						X			

PERFORMING ULTRASONIC WELDING (USW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AR001	Set up ultrasonic welding (USW) equipment						X			
760AR002	Perform minor maintenance on ultrasonic equipment						X			
760AR003	Weld materials using ultrasonic welding process						X			

PERFORMING LASER BEAM WELDING (LBW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AS001	Set up laser beam welding (LBW) equipment						X			
760AS002	Weld materials using laser beam welding process						X			

PERFORMING ELECTRON BEAM WELDING (EBW)

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AT001	Set up electron beam welding (EBW) equipment						X			
760AT002	Weld materials using electron beam welding process						X			

PERFORMING INERTIA WELDING

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AU001	Set up inertia welding equipment						X			
760AU002	Weld materials using inertia welding process						X			

PERFORMING UNDERWATER WELDING

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AV001	Select equipment and electrodes for underwater welding according to job						X			
760AV002	Set up underwater welding equipment						X			
760AV003	Weld materials underwater in various position (1F,4F)						X			
760AV004	Select equipment, gases and electrodes for underwater cutting according to job						X			
760AV005	Set up underwater cutting equipment						X			
760AV006	Cut materials underwater						X			

PERFORMING PLASTIC WELDING

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AW001	Select plastic welding equipment and gases according to job						X			
760AW002	Set up plastic welding equipment						X			
760AW003	Weld plastics using the hot gas method						X			
760AW004	Weld plastics using the heated tool method						X			
760AW005	Weld plastics using the induction method						X			

TESTING WELDS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AX001	Select destructive or non-destructive methods for testing welds						X			
760AX002	Perform visual inspection of welded materials						X			
760AX003	Perform liquid penetrant tests on welded materials						X			
760AX004	Perform hardness tests on welded materials						X			
760AX005	Perform guided bend tests on welded materials						X			
760AX006	Perform tensile tests on welded materials						X			
760AX007	Perform impact tests on welded materials						X			
760AX008	Perform radiographic tests on welded materials						X			
760AX009	Perform ultrasonic tests on welded materials						X			
760AX010	Perform magnetic particle tests on welded materials						X			

ASSEMBLING AND DISASSEMBLING MACHINE MECHANISMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AY001	Install belts and pulleys							X	X	
760AY002	Align and adjust tension of belt drives							X	X	
760AY003	Maintain belt drives							X	X	
760AY004	Construct belt joints							X	X	
760AY005	Inspect belt drive systems							X	X	
760AY006	Troubleshoot belt drive systems							X	X	
760AY007	Repair belt drive systems							X	X	
760AY008	Install chain and sprocket drive							X	X	
760AY009	Align and adjust tension of chain and sprocket drives							X	X	
760AY010	Maintain chain and sprocket drives							X	X	
760AY011	Inspect chain and sprocket drives							X	X	
760AY012	Troubleshoot chain and sprocket drives							X	X	
760AY013	Repair chain and sprocket drives							X	X	
760AY014	Install and align gear drives							X	X	
760AY015	Maintain gear drives							X	X	
760AY016	Clean and lubricate gear drives							X	X	
760AY017	Inspect variable speed drives							X	X	
760AY018	Troubleshoot variable speed drives							X	X	
760AY019	Repair variable speed drives							X	X	
760AY020	Inspect rack and pinion drives							X	X	
760AY021	Troubleshoot rack and pinion drives							X	X	
760AY022	Repair rack and pinion drives							X	X	
760AY023	Inspect ring and pinion drives							X	X	
760AY024	Troubleshoot ring and pinion drives							X	X	
760AY025	Repair ring and pinion drives							X	X	
760AY026	Inspect gear box drives							X	X	
760AY027	Troubleshoot gear box drives							X	X	
760AY028	Repair gear box drives							X	X	
760AY029	Install couplings							X	X	
760AY030	Align couplings							X	X	
760AY031	Inspect couplings							X	X	
760AY032	Troubleshoot couplings							X	X	
760AY033	Disassemble and reassemble couplings							X	X	
760AY034	Replace packing and seals							X	X	
760AY035	Remove and install mechanical seals							X	X	
760AY036	Align pillow blocks and bearings							X	X	
760AY037	Install pillow blocks and bearings							X	X	
760AY038	Remove and install bearings in bores							X	X	

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AY039	Remove and install sleeve bearings in bores							X	X	
760AY040	Remove and install bearings on shafts							X	X	
760AY041	Lubricate equipment							X	X	
760AY042	Inspect bearings and mechanisms							X	X	
760AY043	Troubleshoot bearings							X	X	
760AY044	Replace shaft							X	X	
760AY045	Install shaft assembly							X	X	
760AY046	Align shaft							X	X	
760AY047	Replace universal joint							X	X	
760AY048	Install universal joint							X	X	
760AY049	Repair universal joint							X	X	
760AY050	Adjust gibs for free operation							X	X	
760AY051	Inspect linkages and lever mechanisms							X	X	
760AY052	Troubleshoot linkages and lever mechanisms							X	X	
760AY053	Repair linkages and lever mechanisms							X	X	
760AY054	Install centrifugal clutch							X	X	
760AY055	Inspect centrifugal clutch							X	X	
760AY056	Repair centrifugal clutch							X	X	
760AY057	Install safety guards for conveyor system							X	X	
760AY058	Fabricate safety guards for conveyor system							X	X	
760AY059	Align drive mechanism for conveyor system							X	X	
760AY060	Assemble conveyor system from component parts							X	X	
760AY061	Install conveyor into material handling system							X	X	
760AY062	Troubleshoot conveyor system							X	X	
760AY063	Repair conveyor system							X	X	

INSTALLING AND REMOVING MACHINERY

		MT	M	TD	PP	SM	CW	MR	AM	TP
760AZ001	Prepare area for machine installation							X	X	
760AZ002	Raise machinery using jacks, bars and blocks							X	X	
760AZ003	Move machinery using fork lift							X	X	
760AZ004	Rig chain fall to remove or install machinery							X	X	
760AZ005	Move machinery using overhead crane or chainfall							X	X	
760AZ006	Position and secure machinery on foundation							X	X	
760AZ007	Level machinery on foundation							X	X	
760AZ008	Align machinery							X	X	
760AZ009	Connect machinery to electrical source							X	X	
760AZ010	Connect machine to air or hydraulic source							X	X	
760AZ011	Balance machinery using vibration test							X	X	
760AZ012	Block and brace equipment for moving or shipping							X	X	
760AZ013	Crib equipment							X	X	
760AZ014	Lift equipment using slings							X	X	
760AZ015	Move equipment with skids							X	X	
760AZ016	Move equipment with dollies							X	X	

MAINTAINING HYDRAULIC SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BA001	Shut down hydraulic system							X	X	
760BA002	Replace and clean hydraulic strainer/filters							X	X	
760BA003	Clean and flush hydraulic motor system							X	X	
760BA004	Drain and refill hydraulic system							X	X	
760BA005	Troubleshoot hydraulic actuator							X	X	
760BA006	Replace hydraulic actuator							X	X	
760BA007	Adjust hydraulic pressure							X	X	
760BA008	Troubleshoot pressure regulators							X	X	

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BA009	Troubleshoot hydraulic control valve operations							X	X	
760BA010	Inspect pressure control valve							X	X	
760BA011	Replace valve in hydraulic system							X	X	
760BA012	Null hydraulic servo valve							X	X	
760BA013	Test accumulator charge							X	X	
760BA014	Recharge accumulator							X	X	
760BA015	Replace defective accumulator							X	X	
760BA016	Replace hydraulic pump							X	X	
760BA017	Align hydraulic pump							X	X	
760BA018	Seal gaskets							X	X	
760BA019	Replace hydraulic motor							X	X	
760BA020	Align hydraulic motor							X	X	
760BA021	Replace internal components in hydraulic motor							X	X	
760BA022	Replace hydraulic gasket and seals							X	X	
760BA023	Install hydraulic line							X	X	
760BA024	Connect hydraulic components to machines							X	X	
760BA025	Replace damaged hydraulic lines, fittings and components							X	X	
760BA026	Clear restriction from sealed hydraulic system							X	X	
760BA027	Troubleshoot heat exchanger							X	X	
760BA028	Measure pressure within hydraulic system							X	X	
760BA029	Measure flow within hydraulic system							X	X	
760BA030	Inspect hydraulic systems							X	X	
760BA031	Troubleshoot hydraulic systems							X	X	
760BA032	Repair hydraulic systems							X	X	
760BA033	Maintain hydraulic systems							X	X	
760BA034	Determine problem using available troubleshooting techniques							X	X	
760BA035	Interpret control diagrams for hydraulic systems							X	X	
760BA036	Diagnose malfunctions of hydraulic systems using test and measurement equipment							X	X	

MAINTAINING PNEUMATIC SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BB001	Troubleshoot air pressure regulators							X	X	
760BB002	Troubleshoot pneumatic pump							X	X	
760BB003	Verify pneumatic flow control valve operation							X	X	
760BB004	Troubleshoot pneumatic actuator							X	X	
760BB005	Replace defective pneumatic gages							X	X	
760BB006	Replace defective pneumatic lines							X	X	
760BB007	Replace air filter							X	X	
760BB008	Service pneumatic air compressor							X	X	
760BB009	Replace pneumatic air compressor							X	X	
760BB010	Verify air motor							X	X	
760BB011	Replace air motor							X	X	
760BB012	Sequence pneumatic cylinders							X	X	
760BB013	Replace pneumatic cylinders							X	X	
760BB014	Verify humidity control							X	X	
760BB015	Troubleshoot air logic system							X	X	
760BB016	Verify air logic to diagram							X	X	
760BB017	Leak test vacuum/pressure system							X	X	
760BB018	Clear restrictions from sealed pneumatic system							X	X	
760BB019	Test fittings for air leaks							X	X	

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BB020	Repair air leaks							X	X	
760BB021	Replace defective fittings							X	X	
760BB022	Lubricate pneumatic system							X	X	
760BB023	Install pneumatic systems							X	X	
760BB024	Inspect pneumatic systems							X	X	
760BB025	Troubleshoot pneumatic systems							X	X	
760BB026	Repair pneumatic systems							X	X	
760BB027	Maintain pneumatic systems							X	X	
760BB028	Determine problem using available troubleshooting techniques							X	X	
760BB029	Interpret control diagrams for pneumatic systems							X	X	
760BB030	Diagnose malfunctions of pneumatic systems using test and measurement equipment							X	X	

MAINTAINING AND REPAIRING ELECTRICAL SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BC001	Replace fuses							X	X	
760BC002	Reset circuit breaker after overload							X	X	
760BC003	Remove electrical overloads							X	X	
760BC004	Troubleshoot electrical control components							X	X	
760BC005	Change rotation of 3-phase electric motor							X	X	
760BC006	Replace faulty electrical cords and plugs							X	X	
760BC007	Replace electric motor brushes							X	X	
760BC008	Lubricate electric motor							X	X	
760BC009	Install or replace electric motor							X	X	
760BC010	Clean electric motor							X	X	
760BC011	Replace defective relay							X	X	
760BC012	Verify electrical sensor operation							X	X	
760BC013	Verify motor starter circuit							X	X	
760BC014	Verify electric motor operation							X	X	
760BC015	Verify thermostat operation							X	X	
760BC016	Verify power supply operation							X	X	
760BC017	Verify solenoid operation							X	X	
760BC018	Determine electrical problems using available troubleshooting techniques							X	X	
760BC019	Interpret control diagrams for electrical systems							X	X	
760BC020	Diagnose malfunctions of electrical systems using test and measurement equipment							X	X	

MAINTAINING AND REPAIRING HEATING AND COOLING DEVICES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BD001	Calibrate and adjust thermostat							X		
760BD002	Lubricate air compressor							X		
760BD003	Adjust air compressor to minimize noise							X		
760BD004	Adjust air compressor to reduce overload							X		
760BD005	Disassemble and reassemble air compressor							X		
760BD006	Install air compressor							X		
760BD007	Clean condenser/evaporator							X		
760BD008	Install air cooled condenser							X		
760BD009	Install evaporative condenser							X		
760BD010	Calibrate metering devices							X		
760BD011	Clean air circulation ducts							X		
760BD012	Install fan guards, shrouds or mesh covers							X		
760BD013	Install mechanical roof ventilators							X		
760BD014	Remove foreign debris from cooling towers							X		

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BD015	Drain and charge air conditioning system							X		
760BD016	Clean and lubricate fans and ventilators							X		
760BD017	Calibrate and adjust airflow controls							X		
760BD018	Calibrate and adjust temperature controls							X		
760BD019	Calibrate and adjust pneumatic controls							X		
760BD020	Calibrate and adjust pressure controls							X		
760BD021	Replace air filters and air bags							X		
760BD022	Assemble and disassemble centrifugal fan							X		
760BD023	Inspect freight and personnel elevators							X		
760BD024	Adjust doors, guards and gates for elevators							X		
760BD025	Replace elevator cables							X		
760BD026	Replace hand controls for elevators							X		

INSPECTING AND REPAIRING CRANES AND ELEVATORS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BE001	Replace cable on electric cable drum hoist							X		
760BE002	Replace cable on bridge crane							X		
760BE003	Replace pulleys on cranes							X		
760BE004	Replace mechanical safety devices on cranes							X		
760BE005	Replace electrical safety devices on cranes							X		
760BE006	Inspect tracks and runway areas							X		
760BE007	Replace runway tracks for cranes							X		
760BE008	Adjust mechanical brakes on cranes and elevators							X		
760BE009	Troubleshoot and repair cranes							X		
760BE010	Troubleshoot and repair elevators							X		

MAINTAINING AND REPAIRING ELECTRONIC CONTROL SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BF001	Verify servo amplifier operation							X	X	
760BF002	Insure that environmental conditions are met								X	
760BF003	Verify servo motor control circuits							X	X	
760BF004	Verify terminal device operation							X	X	
760BF005	Troubleshoot communications links							X	X	
760BF006	Troubleshoot printed circuit board							X	X	
760BF007	Calibrate position feedback device							X	X	
760BF008	Troubleshoot position device							X	X	
760BF009	Troubleshoot robot controller								X	
760BF010	Perform electrical adjustments on servo power amplifiers							X	X	
760BF011	Determine problem using available trouble-shooting techniques								X	
760BF012	Interpret control diagrams for electronic systems								X	
760BF013	Diagnose malfunctions of electronic systems using test and measurement equipment								X	
760BF014	Interchange different open-loop controllers between systems								X	
760BF015	Interchange different closed-loop controllers between systems								X	
760BF016	Adjust control system feedback loops								X	

MAINTAINING AND REPAIRING AUTOMATED SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BG001	Run diagnostic routine								X	
760BG002	Troubleshoot end effectors								X	
760BG003	Troubleshoot automatic lubrication system								X	

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BG004	Troubleshoot vision system								X	
760BG005	Verify pressure control system operation								X	
760BG006	Troubleshoot pressure or vacuum switch operation								X	
760BG007	Verify drive mechanism								X	
760BG008	Troubleshoot timing of automated (CAM) system								X	
760BG009	Service bearings								X	
760BG010	Adjust clutch/brake system								X	
760BG011	Adjust linkage								X	
760BG012	Troubleshoot overload protection device operation								X	
760BG013	Apply requirements of service bulletins								X	
760BG014	Aid fault isolation using manual's troubleshooting charts								X	
760BG015	Aid fault repair using manual's trouble-shooting charts								X	
760BG016	Disassemble, repair, test and return to service robots which have failed								X	
760BG017	Troubleshoot and repair automated systems								X	
760BG018	Maintain automated systems								X	

INSTALLING AND TROUBLESHOOTING SENSORS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BH001	Install and adjust tactile sensors								X	
760BH002	Troubleshoot and repair tactile sensors								X	
760BH003	Install and adjust video sensors								X	
760BH004	Troubleshoot and repair video sensors								X	
760BH005	Install and adjust fiber-optic components								X	
760BH006	Troubleshoot and repair fiber-optic components								X	
760BH007	Troubleshoot and repair fiber-optic systems								X	
760BH008	Set up machine vision system								X	
760BH009	Install and adjust magnetic sensors								X	
760BH010	Troubleshoot and repair magnetic sensors								X	
760BH011	Install and adjust thermal sensors								X	
760BH012	Troubleshoot and repair thermal sensors								X	
760BH013	Install and adjust sonic sensors								X	
760BH014	Troubleshoot and repair sonic sensors								X	
760BH015	Install and adjust pressure sensors								X	
760BH016	Troubleshoot and repair pressure sensors								X	
760BH017	Install and adjust microwave sensors								X	
760BH018	Troubleshoot and repair microwave sensors								X	

INSTALLING AUTOMATED SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BI001	Install robots								X	
760BI002	Install work cell								X	
760BI003	Install automated systems								X	
760BI004	Evaluate initial start-up of robotic system								X	
760BI005	Evaluate initial start-up of work cell								X	
760BI006	Evaluate initial start-up of automated system								X	
760BI007	Start up and debug robot system								X	
760BI008	Measure robot performance for distance								X	
760BI009	Measure robot performance for positioning								X	
760BI010	Measure robot performance for accuracy								X	
760BI011	Measure robot performance for repeatability								X	
760BI012	Analyze operating difficulties of robots and adjust to specifications								X	

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BI013	Adjust equipment for accuracy and repeatability								X	
760BI014	Install and adjust end of arm tools (end effectors)								X	
760BI015	Install and adjust actuators (open/closed loop)								X	
760BI016	Verify system interlock operation								X	
760BI017	Install robot controller								X	
760BI018	Install programmable controller and input/output devices								X	
760BI019	Install communication links								X	
760BI020	Optimize existing system performance								X	
760BI021	Field test robot to assure conformance to specifications								X	
760BI022	Define axis control and feedback specifications								X	
760BI023	Specify robot coordinate system								X	
760BI024	Define human interface with automated system								X	
760BI025	Interconnect robots and other equipment								X	
760BI026	Analyze and select sensing requirements for manufacturing requirements								X	
760BI027	Set up robot to pick and place								X	
760BI028	Design system for counting regularly shaped objects								X	
760BI029	Design system for counting irregularly shaped objects								X	
760BI030	Coordinate operation of several pieces of automatic equipment								X	
760BI031	Adjust automated systems for accuracy and repeatability								X	
760BI032	Start up and shut down automated production system								X	
760BI033	Follow manufacturer's troubleshooting procedures for automated system								X	

PROGRAMMING AUTOMATED SYSTEMS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BJ001	Develop written program								X	
760BJ002	Enter executive software into control unit								X	
760BJ003	Load program into robot								X	
760BJ004	Test program								X	
760BJ005	Operate teach mode								X	
760BJ006	Interpret error messages								X	
760BJ007	Program stepper motors								X	
760BJ008	Program programmable logic controllers (PLC's) for specific sequence of events in performing application								X	
760BJ009	Draw logic diagrams (flow charts)								X	
760BJ010	Program, test and edit using teaching pendant								X	
760BJ011	Perform zeroing of encoders								X	

PROGRAMMING AND PLANNING

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BK001	Develop programmed instructions from blueprint								X	
760BK002	Develop programmed instructions from piece part								X	
760BK003	Draw sketch of desired workpiece								X	
760BK004	Select program (manual or computer-assisted)								X	
760BK005	Choose machine tools for part								X	

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BK006	Select tools and holders								X	
760BK007	Select spindle speed								X	
760BK008	Select feedrate for axis travel								X	
760BK009	Position workpiece in relation to machine axis								X	
760BK010	Determine absolute or incremental mode								X	
760BK011	Compute polar/rectangular coordinates								X	
760BK012	Compute workpiece geometry								X	
760BK013	Verify cutter path								X	
760BK014	Plot program								X	
760BK015	Depict part graphically								X	
760BK016	Define cutter path								X	
760BK017	Operate post processor								X	
760BK018	Write post processor								X	
760BK019	Program tool change procedure								X	
760BK020	Prepare operator instructions for piece part								X	
760BK021	Calculate run time								X	
760BK022	Prepare tape								X	
760BK023	Select canned cycles								X	
760BK024	Program restart points								X	
760BK025	Write manual program								X	
760BK026	Program with purchased software								X	
760BK027	Design special fixtures for custom job								X	
760BK028	Design clamps and holders for custom job								X	
760BK029	Write manual complex contouring program								X	
760BK030	Enter tool offset								X	
760BK031	Enter tool length compensation								X	
760BK032	Repair broken tape								X	
760BK033	Update programs from engineering changes								X	
760BK034	Determine job priorities								X	
760BK035	Schedule programs								X	
760BK036	Schedule heat-treated materials								X	
760BK037	Schedule secondary processes								X	
760BK038	Schedule plating								X	

PERFORMING OPERATING FUNCTIONS OF AUTOMATED SYSTEM

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BL001	Assist supervisor in implementing plan for initial setup installation and maintenance of automated system								X	
760BL002	Determine resources needed to continue production								X	
760BL003	Arrange for acquisition of equipment and materials								X	
760BL004	Coordinate with other workers to complete task								X	

PERFORMING COMMUNICATION FUNCTIONS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BM001	Prepare technical reports including charts, graphs, status reports, project summary and manuals							X	X	
760BM002	Make oral presentations							X	X	
760BM003	Interface with vendors								X	
760BM004	Demonstrate how equipment works							X	X	
760BM005	Train others in use of automated system's equipment								X	

PERFORMING QUALITY CONTROL AND QUALITY ASSURANCE FUNCTIONS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BN001	Co-develop and implement quality control and inspection standards and procedures								X	
760BN002	Conduct quality tests on process and product								X	
760BN003	Calibrate test and measurement equipment								X	
760BN004	Participate in work teams								X	
760BN005	Apply statistical in-process quality control (SPC)								X	

ADAPTING AUTOMATED SYSTEMS FOR MANUFACTURING

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BO001	Adapt automated system for welding applications								X	
760BO002	Adapt automated system for painting applications								X	
760BO003	Adapt automated system for bonding applications								X	
760BO004	Adapt automated system for machining applications								X	
760BO005	Adapt automated system for material handling applications								X	
760BO006	Adapt automated system for assembly applications								X	
760BO007	Adapt automated system for packing applications								X	

REVIEWING DAY'S PRIORITIES

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BP001	Review schedule with supervisor									X
760BP002	Review status with previous shift									X
760BP003	Review quality control status									X
760BP004	Develop list of priority tasks									X
760BP005	Coordinate implementation of tasks									X
760BP006	Report day's events and status									X

REVIEWING THE UPCOMING ORDER

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BQ001	Review statistical quality control (S.Q.C.) requirements									X
760BQ002	Review last run information									X
760BQ003	Review production requirements									X
760BQ004	Develop set-up procedures for new mold									X

HANDLING RAW MATERIALS

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BR001	Certify type of materials selected									X
760BR002	Mix materials if required									X
760BR003	Dry materials if required									X
760BR004	Load materials into hopper									X
760BR005	Return excess materials to storage									X

PREPARING MOLDING MACHINE

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BS001	Clean molding machine									X
760BS002	Inspect molding machine for maintenance and safety									X
760BS003	Initiate molding machine repairs									X
760BS004	Adjust set-up parameters									X

SETTING MOLD

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BT001	Select mold from storage									X
760BT002	Mount mold in machine									X
760BT003	Inspect mold visually									X
760BT004	Prepare mold for storage									X
760BT005	Remove mold from machine									X
760BT006	Return mold to storage									X

COORDINATING AUXILIARY EQUIPMENT

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BU001	Select liquid mold temperature control equipment									X
760BU002	Inspect auxiliary equipment for maintenance and safety									X
760BU003	Initiate auxiliary equipment repairs									X
760BU004	Attach temperature control equipment to mold									X
760BU005	Prepare plastic granulator									X
760BU006	Prepare material dryer									X
760BU007	Prepare raw material handling equipment									X
760BU008	Prepare parts removal system									X
760BU009	Attach hydraulic equipment									X
760BU010	Attach pneumatic equipment									X
760BU011	Attach electrical equipment									X
760BU012	Remove auxiliary equipment upon job completion									X

COORDINATING SECONDARY OPERATIONS EQUIPMENT

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BV001	Select secondary operations equipment									X
760BV002	Inspect secondary equipment for maintenance and safety									X
760BV003	Initiate secondary equipment repairs									X
760BV004	Select secondary operations supplies									X
760BV005	Set up secondary operations equipment and supplies									X
760BV006	Remove secondary equipment upon job completion									X

ORGANIZING OPERATOR WORK AREA

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BW001	Clean machine work area									X
760BW002	Identify and resolve safety hazards									X
760BW003	Arrange work area									X
760BW004	Prepare necessary production supplies									X
760BW005	Coordinate statistical quality control/ statistical process control (S.Q.C./S.P.C.) material									X
760BW006	Return statistical quality control/statistical process control (S.Q.C./S.P.C.) material to control at job completion									X

PROCESSING PRODUCTION

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BX001	Check processing parameters									X
760BX002	Introduce material to the process									X
760BX003	Start molding cycle									X
760BX004	Perform initial quality control									X
760BX005	Adjust processing parameters									X
760BX006	Submit parts for first piece approval									X
760BX007	Document setup and job information									X
760BX008	Monitor production process									X
760BX009	Submit last piece sample									X
760BX010	Follow appropriate shutdown procedures									X

FAMILIARIZING OPERATOR WITH THE JOB

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BY001	Review statistical quality control (S.Q.C.) requirements									X
760BY002	Review job production methods									X
760BY003	Review job safety									X
760BY004	Provide training as needed									X
760BY005	Monitor operator performance									X

CONTINUING EDUCATION

		MT	M	TD	PP	SM	CW	MR	AM	TP
760BZ001	Learn raw material processing techniques									X
760BZ002	Learn equipment operation									X
760BZ003	Learn statistical quality control/statistical process control (S.Q.C./S.P.C.) techniques									X
760BZ004	Learn management techniques									X
760BZ005	Learn new technology									X
760BZ006	Review safety requirements									X

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

TECHNICAL PREPARATION CLUSTER

Computer Repair Technician
Electrical and Electronic Technician
Automated Manufacturing Systems Technician
*Employability Skills

***Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list**

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

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TECHNICAL PREPARATION CLUSTER MATRIX

CRT = Computer Repair Technician
EET = Electrical and Electronic Technician
AM = Automated Manufacturing Systems Technician

APPLYING SAFETY PRACTICES

		CRT	EET	AM
780A001	Apply basic emergency first aid techniques	X	X	X
780A002	Complete accident report	X	X	X
780A003	Inspect work area and equipment for safe working environment	X	X	X
780A004	Report shop, environmental and equipment safety violations	X	X	X
780A005	Demonstrate use of fire extinguishers	X	X	X
780A006	Plan shutdown procedure for given area	X	X	
780A007	Participate in disaster control exercises	X	X	X
780A008	Prepare plan for disaster control exercises	X	X	
780A009	Participate in shop safety committee	X	X	X
780A010	Organize shop safety committee	X	X	
780A011	Correct safety hazards	X	X	X
780A012	Demonstrate cardiopulmonary resuscitation (CPR) techniques	X	X	X
780A013	Comply with shop and equipment safety rules			X
780A014	Comply with safety requirements for working around automated systems			X
780A015	Participate in safety training program			X
780A016	Conduct safety training program			X

ANALYZING DC CIRCUITS

		CRT	EET	AM
780B001	Read and interpret color codes	X	X	
780B002	Analyze, construct and troubleshoot series circuits	X	X	
780B003	Analyze, construct and troubleshoot parallel circuits	X	X	
780B004	Analyze, construct and troubleshoot series-parallel circuits	X	X	
780B005	Analyze, construct and troubleshoot voltage dividers	X	X	
780B006	Analyze, construct and verify maximum power theory	X	X	
780B007	Analyze, construct and troubleshoot resistance x capacitance (RC) and resistance x inductance (RL) circuits	X	X	

ANALYZING AC CIRCUITS

		CRT	EET	AM
780C001	Set up and operate frequency counters and signal generators for AC circuits	X	X	
780C002	Analyze, construct and troubleshoot AC capacitive circuits using a schematic	X	X	
780C003	Analyze, construct and troubleshoot AC inductive circuits using a schematic	X	X	
780C004	Analyze and apply principles of transformers to AC circuits using a schematic	X	X	
780C005	Analyze, construct and troubleshoot resistor, capacitor and inductor (RCL) circuits using a schematic	X	X	
780C006	Analyze, construct and troubleshoot series and parallel resonant circuits using a schematic	X	X	
780C007	Analyze, construct and troubleshoot filter circuits using a schematic	X	X	

ANALYZING SOLID STATE DEVICES

		CRT	EET	AM
780D001	Analyze, construct and troubleshoot simple common base amplifiers using a schematic	X	X	
780D002	Analyze, construct and troubleshoot simple common emitters using a schematic	X	X	
780D003	Analyze, construct and troubleshoot simple common collectors using a schematic	X	X	
780D004	Examine field effect transistor (FET) characteristics	X	X	
780D005	Analyze, construct and troubleshoot simple common sources using a schematic	X	X	
780D006	Analyze, construct and troubleshoot simple common drains using a schematic	X	X	
780D007	Analyze, construct and troubleshoot simple common gains using a schematic	X	X	
780D008	Analyze, construct and troubleshoot thyristors using a schematic	X	X	
780D009	Analyze, construct and troubleshoot integrated circuit operational amplifiers using a schematic	X	X	
780D010	Analyze, construct and troubleshoot optoelectronic devices using a schematic	X	X	

ANALYZING ANALOG CIRCUITS

		CRT	EET	AM
780E001	Analyze, construct and troubleshoot single-stage amplifiers using a schematic	X	X	
780E002	Analyze, construct and troubleshoot multistage amplifiers using a schematic	X	X	
780E003	Analyze, construct and troubleshoot basic power supplies, filters and regulators using a schematic	X	X	
780E004	Analyze, construct and troubleshoot differential and operational amplifiers using a schematic	X	X	
780E005	Analyze, construct and troubleshoot active filters using a schematic	X	X	
780E006	Analyze, construct and troubleshoot oscillators using a schematic	X	X	
780E007	Analyze, construct and troubleshoot basic pulse circuits using a schematic	X	X	
780E008	Analyze, construct and troubleshoot basic modulation circuits using a schematic	X	X	

ANALYZING DIGITAL ELECTRONIC CIRCUITS

		CRT	EET	AM
780F001	Analyze and troubleshoot basic digital logic gate integrated circuits using a schematic	X	X	
780F002	Verify basic Boolean expressions using basic logic gates	X	X	
780F003	Analyze, construct and troubleshoot basic encoding and decoding circuits using a schematic	X	X	
780F004	Analyze, construct and troubleshoot flip flops (memory) using a schematic	X	X	
780F005	Analyze, construct and troubleshoot shift registers using a schematic	X	X	

		CRT	EET	AM
780F006	Analyze, construct and troubleshoot counters using a schematic	X	X	
780F007	Analyze, construct and troubleshoot arithmetic circuits using a schematic	X	X	
780F008	Analyze, construct and troubleshoot basic digital logic systems using a schematic	X	X	

PERFORMING MICROPROCESSING OPERATIONS

		CRT	EET	AM
780G001	Write, enter, verify and run simple machine language programs	X	X	
780G002	Write, enter, verify and run machine language arithmetic programs	X	X	
780G003	Write, enter, verify and run machine language branching programs	X	X	
780G004	Perform basic programming using algorithms	X	X	
780G005	Write, enter, verify and run machine language program using additional addressing modes	X	X	
780G006	Perform basic programming using branching, algorithms and flow charting	X	X	
780G007	Perform basic programming to demonstrate computer arithmetic	X	X	
780G008	Prepare simple program to demonstrate operation of microprocessor unit (MPU) stack, subroutines, input/output (I/O) and interrupts	X	X	
780G009	Prepare simple program to perform interface operations with random access memory (RAM) and display	X	X	
780G010	Prepare simple program to perform interface operations with switches and light emitted diodes (LEO's)	X	X	
780G011	Interface analog to digital converters to microprocessor	X	X	
780G012	Interface digital to analog converters to microprocessor	X	X	

PERFORMING LAB PRACTICES

		CRT	EET	AM
780H001	Assemble printed circuit (PC) board	X	X	
780H002	Solder wires to turret terminals and printed circuit (PC) boards	X	X	
780H003	Assemble and solder printed circuit (PC) board	X	X	
780H004	Repair printed circuit (PC) board	X	X	
780H005	Set up and operate scales	X	X	
780H006	Set up and operate mechanical and optical measuring devices	X	X	
780H007	Set up and operate height gauges	X	X	
780H008	Set up and operate depth gauges	X	X	
780H009	Set up and operate oscilloscopes	X	X	
780H010	Set up and operate multimeter and power supplies	X	X	
780H011	Set up and operate capacitor inductor analyzers	X	X	
780H012	Set up and operate semiconductor testers and curve tracers	X	X	
780H013	Set up and operate chart recorder	X	X	
780H014	Set up and use digital test equipment	X	X	

RECORDING AND REPORTING TECHNICAL MATERIAL

		CRT	EET	AM
780I001	Record data and design curves and graphs	X	X	
780I002	Write reports	X	X	
780I003	Make equipment failure reports	X	X	
780I004	Specify and requisition simple electronic components	X	X	
780I005	Write formal reports of laboratory experiences	X	X	

USING TECHNICAL REFERENCES

		CRT	EET	AM
780J001	Identify manufacturers of various electronic devices using numerical integrated circuit (IC) reference manuals	X	X	
780J002	Identify specific characteristics of various electronic devices using manufacturers' reference manuals	X	X	
780J003	Identify distributors of various electronic devices using reference manuals	X	X	
780J004	Cross-reference various electronic devices between manufacturers using reference manuals	X	X	
780J005	Determine maintenance procedures using manuals	X	X	

MAINTAINING AND REPAIRING ELECTRICAL SYSTEMS

		CRT	EET	AM
780K001	Replace faulty electrical cords and plugs	X	X	X
780K002	Determine electrical problems using available troubleshooting techniques	X	X	X
780K003	Interpret control diagrams for electrical systems	X	X	X
780K004	Diagnose malfunctions of electrical systems using test and measurement equipment	X	X	X
780K005	Replace fuses			X
780K006	Reset circuit breaker after overload			X
780K007	Remove electrical overloads			X
780K008	Troubleshoot electrical control components			X
780K009	Change rotation of 3-phase electric motor			X
780K010	Replace electric motor brushes			X
780K011	Lubricate electric motor			X
780K012	Install or replace electric motor			X
780K013	Clean electric motor			X
780K014	Replace defective relay			X
780K015	Verify electrical sensor operation			X
780K016	Verify motor starter circuit			X
780K017	Verify electric motor operation			X
780K018	Verify thermostat operation			X
780K019	Verify power supply operation			X
780K020	Verify solenoid operation			X

MAINTAINING AND REPAIRING ELECTRONIC SYSTEMS

		CRT	EET	AM
780L001	Determine electronic problems using available troubleshooting techniques	X	X	
780L002	Interpret control diagrams for electronic systems	X	X	
780L003	Diagnose malfunctions of electronic systems using available test and measurement equipment	X	X	

CONDUCTING SHOP OPERATIONS

		CRT	EET	AM
780M001	Answer customer questions	X	X	
780M002	Troubleshoot customer problems	X	X	
780M003	Determine repair method	X	X	
780M004	Perform public relations activities	X	X	
780M005	Demonstrate computer equipment functions at store	X	X	
780M006	Demonstrate software functions	X	X	
780M007	Prepare service bill	X	X	
780M008	Maintain accounts receivable/paid records	X	X	
780M009	Maintain receiving records	X	X	
780M010	Maintain shipping records	X	X	
780M011	Maintain records of service tools and equipment	X	X	
780M012	Maintain computer equipment inventory	X	X	
780M013	Maintain call record report	X	X	
780M014	Update on-site maintenance log	X	X	
780M015	Unpack and inspect new equipment	X	X	
780M016	Receive and store parts and supplies	X	X	
780M017	Discuss delivery schedule with approved supplier	X	X	
780M018	Order parts and supplies	X	X	
780M019	Establish customer and equipment history file	X	X	
780M020	Establish customer files	X	X	
780M021	Prepare items for shipping	X	X	
780M022	Update service manuals	X	X	
780M023	Update parts catalogs	X	X	
780M024	Modify wiring diagrams to reflect repair changes	X	X	

PERFORMING HOUSEKEEPING AND RECORDKEEPING

		CRT	EET	AM
780N001	Clean and maintain work area and leave in safe condition	X	X	X
780N002	Follow tool crib procedures	X	X	X
780N003	Report problems to supervisor	X	X	X
780N004	Complete time cards	X	X	X
780N005	Complete job status reports	X	X	X
780N006	Make equipment failure reports	X	X	X
780N007	Determine basic maintenance procedures using manuals	X	X	X
780N008	Participate in participation management program (Quality Circles)	X	X	X
780N009	Clean and store hand tools, cutters, fixtures, jigs and attachments			X
780N010	Record preventive maintenance activities			X
780N011	Record repair activities			X
780N012	Read job orders and process sheets to determine tooling and setup information			X

PERFORMING SUPERVISORY FUNCTIONS

		CRT	EET	AM
7800001	Determine availability of machines, supplies and materials	X	X	X
7800002	Requisition, schedule and distribute supplies and materials	X	X	X
7800003	Coordinate workers with work to be done	X	X	X
7800004	Schedule and control shop flow of jobs	X	X	X
7800005	Maintain files	X	X	X
7800006	Maintain service records	X	X	
7800007	Maintain labor records	X	X	X
7800008	Explain work requirements	X	X	X
7800009	Write technical reports	X	X	X

		CRT	EET	AM
7800010	Inventory supplies and equipment	X	X	X
7800011	Maintain charts, tables, graphs or status boards on work scheduled	X	X	X
7800012	Check job/time cards	X	X	X
7800013	Inspect shop equipment and arrange for maintenance and repair work	X	X	X
7800014	Coordinate maintenance and repair of shop equipment	X	X	X
7800015	Develop preventative maintenance program	X	X	
7800016	Plan and implement technical training for employees	X	X	X
7800017	Train new service technicians	X	X	
7800018	Evaluate employee progress and performance	X	X	X
7800019	Follow up employee reports of problems or equipment failures	X	X	X
7800020	Interview job applicants	X	X	X
7800021	Estimate cost of equipment installation	X	X	X
7800022	Estimate cost of system installation	X	X	X
7800023	Estimate cost of maintenance repairs and downtime	X	X	
7800024	Conduct meetings	X	X	X
7800025	Select most productive machine tool and tooling for job			X
7800026	Write work schedules			X
7800027	Maintain production records			X
7800028	Maintain warranty records			X
7800029	Review job orders, process sheets and blueprint specifications			X
7800030	Issue blueprints, job orders, process sheets and tooling			X
7800031	Write production and progress reports			X
7800032	Submit parts for first piece inspection			X
7800033	Conduct in-process inspections			X
7800034	Monitor reports of discrepancy or rejects during production process			X
7800035	Follow up on end product quality control standards			X
7800036	Initiate engineering change notices and rejection reports			X
7800037	Write requests for deviation to specifications			X
7800038	Supervise machine use			X
7800039	Prepare preventive maintenance schedule			X
7800040	Evaluate preventive maintenance program			X
7800041	Prepare repair schedule			X
7800042	Observe maintenance and repair activities			X
7800043	Evaluate repair activities			X
7800044	Train employees to operate mechanical devices			X
7800045	Estimate cost of repairs and downtime			X
7800046	Supervise assembly operations			X

INSTALLING COMPUTER EQUIPMENT

		CRT	EET	AM
780P001	Determine customer computing requirements	X		
780P002	Design computer system layout	X		
780P003	Transport computer equipment	X		
780P004	Set up computer equipment	X		
780P005	Perform computer installation tests	X		
780P006	Demonstrate usage of computer system on-site	X		
780P007	Complete warranty cards for computer equipment	X		
780P008	Construct cables for computer equipment	X		

EVALUATING COMPUTER DIAGNOSTICS

		CRT	EET	AM
780Q001	Conduct motherboard random access memory (RAM) test	X		
780Q002	Conduct motherboard read only memory random access (ROM) test	X		
780Q003	Conduct programmers' aid test	X		
780Q004	Conduct computer keyboard test	X		
780Q005	Conduct computer paddle/button test	X		
780Q006	Conduct computer tape read/write/verify test	X		
780Q007	Conduct computer color bar test	X		
780Q008	Conduct computer graphic tablet test	X		
780Q009	Conduct basic/integer read only memory (ROM) card test	X		
780Q010	Conduct computer language card test	X		
780Q011	Conduct computer disk interface card test	X		
780Q012	Conduct computer printer card test	X		
780Q013	Conduct computer serial communication card test	X		
780Q014	Conduct computer monitor test	X		
780Q015	Conduct computer oscilloscope test	X		
780Q016	Conduct computer data communication line test	X		
780Q017	Interpret computer diagnostic flow charts	X		

MAINTAINING COMPUTER EQUIPMENT

		CRT	EET	AM
780R001	Clean metallic computer parts	X		
780R002	Clean nonmetallic computer parts	X		
780R003	Clean electrical connections in computer	X		
780R004	Clean computer cable connections	X		
780R005	Clean printer head	X		
780R006	Clean computer disk drive head	X		
780R007	Clean and demagnetize computer tape head	X		
780R008	Lubricate metallic mechanical computer parts	X		
780R009	Lubricate nonmetallic mechanical computer parts	X		
780R010	Adjust mechanical computer assemblies	X		
780R011	Adjust and align computer disk drive head	X		
780R012	Adjust and align computer tape head	X		
780R013	Set computer disk read/write/verify speed	X		
780R014	Set computer tape read/write/verify speed	X		
780R015	Clean or replace computer filters	X		
780R016	Clean outside case/cover of computer	X		

SERVICING COMPUTER EQUIPMENT

		CRT	EET	AM
780S001	Interpret computer troubleshooting charts	X		
780S002	Interpret chip-swapping charts	X		
780S003	Interpret computer schematics	X		
780S004	Interpret manufacturing upgrade	X		
780S005	Remove and install computer cover	X		
780S006	Install computer keyboard	X		
780S007	Install motherboard in computer	X		
780S008	Install power supply in computer	X		
780S009	Install analog board in computer	X		
780S010	Install disk drive assembly in computer	X		
780S011	Install main logic assembly in computer	X		
780S012	Install integrated circuit chips in computer	X		
780S013	Install power light in computer	X		
780S014	Install on-off switch in computer	X		

		CRT	EET	AM
780S015	Install main printed circuit board in computer	X		
780S016	Install power supply printed circuit board in computer	X		
780S017	Install drive motor	X		
780S018	Install print hammer	X		
780S019	Install print mechanism	X		
780S020	Install carriage assembly	X		
780S021	Install paper feed assembly	X		
780S022	Install drive indicator light	X		
780S023	Install peripheral connection cables	X		
780S024	Install peripheral connections	X		
780S025	Install circuit/language cards	X		
780S026	Install modem coupler	X		
780S027	Install tape transport assembly	X		
780S028	Install read/write/verify head	X		
780S029	Install modem set switch	X		
780S030	Install ribbon assembly	X		
780S031	Install drive belts	X		
780S032	Install AC input connections	X		
780S033	Install fuse holders and fuses	X		
780S034	Install ejector mechanisms	X		
780S035	Install cathode ray tube	X		
780S036	Install configuration switches	X		
780S037	Install peripheral controls	X		
780S038	Install data communications adaptor	X		
780S039	Install expansion memory	X		
780S040	Install main memory	X		
780S041	Install field type product line	X		
780S042	Install remote terminals	X		
780S043	Install electrical wiring	X		
780S044	Install keys on keyboard	X		
780S045	Repair keyboard	X		
780S046	Repair motherboard	X		
780S047	Repair analog board	X		
780S048	Repair disk drive assembly	X		
780S049	Repair logic assembly	X		
780S050	Repair on-off switch	X		
780S051	Repair mechanical assembly	X		
780S052	Repair printed circuit board	X		
780S053	Repair drive motor	X		
780S054	Repair carriage assembly	X		
780S055	Repair paper feed assembly	X		
780S056	Repair circuit/language card	X		
780S057	Repair tape transport assembly	X		
780S058	Repair print mechanism	X		
780S059	Repair read/write/verify head	X		
780S060	Repair ribbon assembly	X		
780S061	Repair ejector mechanism	X		
780S062	Repair peripheral controls	X		
780S063	Repair data communications adaptor	X		
780S064	Repair expansion memory	X		
780S065	Repair memory	X		
780S066	Repair field type product line	X		
780S067	Repair remote terminals	X		
780S068	Identify integrated circuit chips	X		
780S069	Identify machine components and test points	X		

		CRT	EET	AM
780S070	Set configuration switches	X		
780S071	Set user switches	X		
780S072	Install mechanical assembly	X		
780S073	Perform operator duties	X		
780S074	Realign read/write/verify head	X		
780S075	Adjust motor speed	X		
780S076	Check AC power source	X		
780S077	Repair power supply	X		

PERFORMING BENCHWORK OPERATIONS

		CRT	EET	AM
780T001	Cut threads with taps and dies			X
780T002	Remove threaded fasteners and repair threads			X
780T003	Deburr parts			X
780T004	Polish parts using coated abrasives			X
780T005	Sharpen and polish tools using abrasive stones			X
780T006	Rough finish parts with hand filing machines			X
780T007	Rough grind parts with hand grinders			X
780T008	Finish parts with hand grinders			X
780T009	Determine high spots using pigment			X
780T010	Remove high spots			X
780T011	Polish and buff parts with portable hand tools			X
780T012	Lap and fit parts			X
780T013	Scrape friction surfaces			X
780T014	Disassemble, assemble and straighten parts using arbor press			X
780T015	Cut keyway with broach			X
780T016	Disassemble, fit and reassemble parts			X
780T017	Lift and position workpiece using hoists			X
780T018	Work materials with hand tools			X
780T019	Work materials with portable power tools			X

PERFORMING PRECISION MEASUREMENT

		CRT	EET	AM
780U001	Measure parts with semi-precision measuring tools			X
780U002	Inspect parts with precision measuring tools			X
780U003	Inspect parts with comparison measuring tools			X
780U004	Set up and inspect parts using dial indicators			X
780U005	Measure threads			X
780U006	Measure tapers			X
780U007	Inspect keyways			X
780U008	Measure gears			X
780U009	Inspect surface finish of parts			X
780U010	Calibrate precision measuring tools			X
780U011	Clean and store precision measuring tools			X
780U012	Verify dimensions			X
780U013	Verify alignments			X
780U014	Verify clearances			X
780U015	Inspect machined parts			X
780U016	Inspect assemblies			X
780U017	Inspect parts with metric measuring instruments			X

PERFORMING LAYOUTS

		CRT	EET	AM
780V001	Analyze specifications			X
780V002	Compute layout dimensions			X
780V003	Plan layout operations			X
780V004	Calculate reference points			X
780V005	Calculate angles from reference point			X
780V006	Calculate arcs from reference point			X
780V007	Calculate locations from reference point			X
780V008	Verify workpiece specifications			X
780V009	Lay out reference points			X
780V010	Lay out angles, arcs and locations from reference point			X
780V011	Label workpiece			X
780V012	Perform semi-precision layouts			X
780V013	Perform precision layouts from blueprints			X
780V014	Verify layouts			X

SELECTING MATERIALS

		CRT	EET	AM
780W001	Interpret color codes, numbering systems and classification systems of materials (ie. AISI, SAE)			X
780W002	Select material for job			X
780W003	Identify metals using spark test			X
780W004	Identify metals using variety of tests			X
780W005	Identify materials			X

ASSEMBLING AND DISASSEMBLING MACHINE MECHANISMS

		CRT	EET	AM
780X001	Install belts and pulleys			X
780X002	Align and adjust tension of belt drives			X
780X003	Maintain belt drives			X
780X004	Construct belt joints			X
780X005	Inspect belt drive systems			X
780X006	Troubleshoot belt drive systems			X
780X007	Repair belt drive systems			X
780X008	Install chain and sprocket drive			X
780X009	Align and adjust tension of chain and sprocket drives			X
780X010	Maintain chain and sprocket drives			X
780X011	Inspect chain and sprocket drives			X
780X012	Troubleshoot chain and sprocket drives			X
780X013	Repair chain and sprocket drives			X
780X014	Install and align gear drives			X
780X015	Maintain gear drives			X
780X016	Clean and lubricate gear drives			X
780X017	Inspect variable speed drives			X
780X018	Troubleshoot variable speed drives			X
780X019	Repair variable speed drives			X
780X020	Inspect rack and pinion drives			X
780X021	Troubleshoot rack and pinion drives			X
780X022	Repair rack and pinion drives			X
780X023	Inspect ring and pinion drives			X
780X024	Troubleshoot ring and pinion drives			X
780X025	Repair ring and pinion drives			X
780X026	Inspect gear box drives			X
780X027	Troubleshoot gear box drives			X
780X028	Repair gear box drives			X

		CRT	EET	AM
780X029	Install couplings			X
780X030	Align couplings			X
780X031	Inspect couplings			X
780X032	Troubleshoot couplings			X
780X033	Disassemble and reassemble couplings			X
780X034	Replace packing and seals			X
780X035	Remove and install mechanical seals			X
780X036	Align pillow blocks and bearings			X
780X037	Install pillow blocks and bearings			X
780X038	Remove and install bearings in bores			X
780X039	Remove and install sleeve bearings in bores			X
780X040	Remove and install bearings on shafts			X
780X041	Lubricate equipment			X
780X042	Inspect bearings and mechanisms			X
780X043	Troubleshoot bearings			X
780X044	Replace shaft			X
780X045	Install shaft assembly			X
780X046	Align shaft			X
780X047	Replace universal joint			X
780X048	Install universal joint			X
780X049	Repair universal joint			X
780X050	Adjust gibs for free operation			X
780X051	Inspect linkages and lever mechanisms			X
780X052	Troubleshoot linkages and lever mechanisms			X
780X053	Repair linkages and lever mechanisms			X
780X054	Install centrifugal clutch			X
780X055	Inspect centrifugal clutch			X
780X056	Repair centrifugal clutch			X
780X057	Install safety guards for conveyor system			X
780X058	Fabricate safety guards for conveyor system			X
780X059	Align drive mechanism for conveyor system			X
780X060	Assemble conveyor system from component parts			X
780X061	Install conveyor into material handling system			X
780X062	Troubleshoot conveyor system			X
780X063	Repair conveyor system			X

INSTALLING AND REMOVING MACHINERY

		CRT	EET	AM
780Y001	Prepare area for machine installation			X
780Y002	Raise machinery using jacks, bars and blocks			X
780Y003	Move machinery using fork lift			X
780Y004	Rig chain fall to remove or install machinery			X
780Y005	Move machinery using overhead crane or chainfall			X
780Y006	Position and secure machinery on foundation			X
780Y007	Level machinery on foundation			X
780Y008	Align machinery			X
780Y009	Connect machinery to electrical source			X
780Y010	Connect machine to air or hydraulic source			X
780Y011	Balance machinery using vibration test			X
780Y012	Block and brace equipment for moving or shipping			X
780Y013	Crib equipment			X
780Y014	Lift equipment using slings			X
780Y015	Move equipment with skids			X
780Y016	Move equipment with dollies			X

MAINTAINING HYDRAULIC SYSTEMS

		CRT	EET	AM
780Z001	Shut down hydraulic system			X
780Z002	Replace and clean hydraulic strainer/filters			X
780Z003	Clean and flush hydraulic motor system			X
780Z004	Drain and refill hydraulic system			X
780Z005	Troubleshoot hydraulic actuator			X
780Z006	Replace hydraulic actuator			X
780Z007	Adjust hydraulic pressure			X
780Z008	Troubleshoot pressure regulators			X
780Z009	Troubleshoot hydraulic control valve operations			X
780Z010	Inspect pressure control valve			X
780Z011	Replace valve in hydraulic system			X
780Z012	Null hydraulic servo valve			X
780Z013	Test accumulator charge			X
780Z014	Recharge accumulator			X
780Z015	Replace defective accumulator			X
780Z016	Replace hydraulic pump			X
780Z017	Align hydraulic pump			X
780Z018	Seal gaskets			X
780Z019	Replace hydraulic motor			X
780Z020	Align hydraulic motor			X
780Z021	Replace internal components in hydraulic motor			X
780Z022	Replace hydraulic gasket and seals			X
780Z023	Install hydraulic line			X
780Z024	Connect hydraulic components to machines			X
780Z025	Replace damaged hydraulic lines, fittings and components			X
780Z026	Clear restriction from sealed hydraulic system			X
780Z027	Troubleshoot heat exchanger			X
780Z028	Measure pressure within hydraulic system			X
780Z029	Measure flow within hydraulic system			X
780Z030	Inspect hydraulic systems			X
780Z031	Troubleshoot hydraulic systems			X
780Z032	Repair hydraulic systems			X
780Z033	Maintain hydraulic systems			X
780Z034	Determine problem using available troubleshooting techniques			X
780Z035	Interpret control diagrams for hydraulic systems			X
780Z036	Diagnose malfunctions of hydraulic systems using test and measurement equipment			X

MAINTAINING PNEUMATIC SYSTEMS

		CRT	EET	AM
780AA001	Troubleshoot air pressure regulators			X
780AA002	Troubleshoot pneumatic pump			X
780AA003	Verify pneumatic flow control valve operation			X
780AA004	Troubleshoot pneumatic actuator			X
780AA005	Replace defective pneumatic gages			X
780AA006	Replace defective pneumatic lines			X
780AA007	Replace air filter			X
780AA008	Service pneumatic air compressor			X
780AA009	Replace pneumatic air compressor			X
780AA010	Verify air motor			X
780AA011	Replace air motor			X
780AA012	Sequence pneumatic cylinders			X
780AA013	Replace pneumatic cylinders			X

		CRT	EET	AM
780AA014	Verify humidity control			X
780AA015	Troubleshoot air logic system			X
780AA016	Verify air logic to diagram			X
780AA017	Leak test vacuum/pressure system			X
780AA018	Clear restrictions from sealed pneumatic system			X
780AA019	Test fittings for air leaks			X
780AA020	Repair air leaks			X
780AA021	Replace defective fittings			X
780AA022	Lubricate pneumatic system			X
780AA023	Install pneumatic systems			X
780AA024	Inspect pneumatic systems			X
780AA025	Troubleshoot pneumatic systems			X
780AA026	Repair pneumatic systems			X
780AA027	Maintain pneumatic systems			X
780AA028	Determine problem using available troubleshooting techniques			X
780AA029	Interpret control diagrams for pneumatic systems			X
780AA030	Diagnose malfunctions of pneumatic systems using test and measurement equipment			X

MAINTAINING AND REPAIRING ELECTRONIC CONTROL SYSTEMS

		CRT	EET	AM
780AB001	Verify servo amplifier operation			X
780AB002	Insure that environmental conditions are met			X
780AB003	Verify servo motor control circuits			X
780AB004	Verify terminal device operation			X
780AB005	Troubleshoot communications links			X
780AB006	Troubleshoot printed circuit board			X
780AB007	Calibrate position feedback device			X
780AB008	Troubleshoot position device			X
780AB009	Troubleshoot robot controller			X
780AB010	Perform electrical adjustments on servo power amplifiers			X
780AB011	Determine problem using available troubleshooting techniques			X
780AB012	Interpret control diagrams for electronic systems			X
780AB013	Diagnose malfunctions of electronic systems using test and measurement equipment			X
780AB014	Interchange different open-loop controllers between systems			X
780AB015	Interchange different closed-loop controllers between systems			X
780AB016	Adjust control system feedback loops			X

MAINTAINING AND REPAIRING AUTOMATED SYSTEMS

		CRT	EET	AM
780AC001	Run diagnostic routine			X
780AC002	Troubleshoot end effectors			X
780AC003	Troubleshoot automatic lubrication system			X
780AC004	Troubleshoot vision system			X
780AC005	Verify pressure control system operation			X
780AC006	Troubleshoot pressure or vacuum switch operation			X
780AC007	Verify drive mechanism			X
780AC008	Troubleshoot timing of automated (CAM) system			X
780AC009	Service bearings			X
780AC010	Adjust clutch/brake system			X
780AC011	Adjust linkage			X

		CRT	EET	AM
780AC012	Troubleshoot overload protection device operation			X
780AC013	Apply requirements of service bulletins			X
780AC014	Aid fault isolation using manual's troubleshooting charts			X
780AC015	Aid fault repair using manual's troubleshooting charts			X
780AC016	Disassemble, repair, test and return to service robots which have failed			X
780AC017	Troubleshoot and repair automated systems			X
780AC018	Maintain automated systems			X

INSTALLING AND TROUBLESHOOTING SENSORS

		CRT	EET	AM
780AD001	Install and adjust tactile sensors			X
780AD002	Troubleshoot and repair tactile sensors			X
780AD003	Install and adjust video sensors			X
780AD004	Troubleshoot and repair video sensors			X
780AD005	Install and adjust fiber-optic components			X
780AD006	Troubleshoot and repair fiber-optic components			X
780AD007	Troubleshoot and repair fiber-optic systems			X
780AD008	Set up machine vision system			X
780AD009	Install and adjust magnetic sensors			X
780AD010	Troubleshoot and repair magnetic sensors			X
780AD011	Install and adjust thermal sensors			X
780AD012	Troubleshoot and repair thermal sensors			X
780AD013	Install and adjust sonic sensors			X
780AD014	Troubleshoot and repair sonic sensors			X
780AD015	Install and adjust pressure sensors			X
780AD016	Troubleshoot and repair pressure sensors			X
780AD017	Install and adjust microwave sensors			X
780AD018	Troubleshoot and repair microwave sensors			X

INSTALLING AUTOMATED SYSTEMS

		CRT	EET	AM
780AE001	Install robots			X
780AE002	Install work cell			X
780AE003	Install automated systems			X
780AE004	Evaluate initial start-up of robotic system			X
780AE005	Evaluate initial start-up of work cell			X
780AE006	Evaluate initial start-up of automated system			X
780AE007	Start up and debug robot system			X
780AE008	Measure robot performance for distance			X
780AE009	Measure robot performance for positioning			X
780AE010	Measure robot performance for accuracy			X
780AE011	Measure robot performance for repeatability			X
780AE012	Analyze operating difficulties of robots and adjust to specifications			X
780AE013	Adjust equipment for accuracy and repeatability			X
780AE014	Install and adjust end of arm tools (end effectors)			X
780AE015	Install and adjust actuators (open/closed loop)			X
780AE016	Verify system interlock operation			X
780AE017	Install robot controller			X
780AE018	Install programmable controller and its input/output devices			X
780AE019	Install communication links			X
780AE020	Optimize existing system performance			X
780AE021	Field test robot to assure conformance to specifications			X

		CRT	EET	AM
780AE022	Define axis control and feedback specifications			X
780AE023	Specify robot coordinate system			X
780AE024	Define human interface with automated system			X
780AE025	Interconnect robots and other equipment			X
780AE026	Analyze and select sensing requirements for manufacturing requirements			X
780AE027	Set up robot to pick and place			X
780AE028	Design system for counting regularly shaped objects			X
780AE029	Design system for counting irregularly shaped objects			X
780AE030	Coordinate operation of several pieces of automatic equipment			X
780AE031	Adjust automated systems for accuracy and repeatability			X
780AE032	Start up and shut down automated production system			X
780AE033	Follow manufacturer's troubleshooting procedures for automated system			X

PROGRAMMING AUTOMATED SYSTEMS

		CRT	EET	AM
780AF001	Develop written program			X
780AF002	Enter executive software into control unit			X
780AF003	Load program into robot			X
780AF004	Test program			X
780AF005	Operate teach mode			X
780AF006	Interpret error messages			X
780AF007	Program stepper motors			X
780AF008	Program programmable logic controllers (PLC's) for specific sequence of events in performing application			X
780AF009	Draw logic diagrams (flow charts)			X
780AF010	Program, test and edit using teaching pendant			X
780AF011	Perform zeroing of encoders			X

PROGRAMMING AND PLANNING

		CRT	EET	AM
780AG001	Develop programmed instructions from blueprint			X
780AG002	Develop programmed instructions from piece part			X
780AG003	Draw sketch of desired workpiece			X
780AG004	Select program (manual or computer-assisted)			X
780AG005	Choose machine tools for part			X
780AG006	Select tools and holders			X
780AG007	Select spindle speed			X
780AG008	Select feedrate for axis travel			X
780AG009	Position workpiece in relation to machine axis			X
780AG010	Determine absolute or incremental mode			X
780AG011	Compute polar/rectangular coordinates			X
780AG012	Compute workpiece geometry			X
780AG013	Verify cutter path			X
780AG014	Plot program			X
780AG015	Depict part graphically			X
780AG016	Define cutter path			X
780AG017	Operate post processor			X
780AG018	Write post processor			X
780AG019	Program tool change procedure			X
780AG020	Prepare operator instructions for piece part			X
780AG021	Calculate run time			X
780AG022	Prepare tape			X

		CRT	EET	AM
780AG023	Select canned cycles			X
780AG024	Program restart points			X
780AG025	Write manual program			X
780AG026	Program with purchased software			X
780AG027	Design special fixtures for custom job			X
780AG028	Design clamps and holders for custom job			X
780AG029	Write manual complex contouring program			X
780AG030	Enter tool offset			X
780AG031	Enter tool length compensation			X
780AG032	Repair broken tape			X
780AG033	Update programs from engineering changes			X
780AG034	Determine job priorities			X
780AG035	Schedule programs			X
780AG036	Schedule heat-treated materials			X
780AG037	Schedule secondary processes			X
780AG038	Schedule plating			X

PERFORMING OPERATING FUNCTIONS OF AUTOMATED SYSTEM

		CRT	EET	AM
780AH001	Assist supervisor in implementing plan for initial setup, installation and maintenance of automated system			X
780AH002	Determine resources needed to continue production			X
780AH003	Arrange for acquisition of equipment and materials			X
780AH004	Coordinate with other workers to complete task			X

PERFORMING COMMUNICATION FUNCTIONS

		CRT	EET	AM
780AI001	Prepare technical reports including charts, graphs, status reports, project summary and manuals			X
780AI002	Make oral presentations			X
780AI003	Interface with vendors			X
780AI004	Demonstrate how equipment works			X
780AI005	Train others in use of automated system's equipment			X

PERFORMING QUALITY CONTROL AND QUALITY ASSURANCE FUNCTIONS

		CRT	EET	AM
780AJ001	Co-develop and implement quality control and inspection standards and procedures			X
780AJ002	Conduct quality tests on process and product			X
780AJ003	Calibrate test and measurement equipment			X
780AJ004	Participate in work teams			X
780AJ005	Apply statistical in-process quality control (SPC)			X

ADAPTING AUTOMATED SYSTEMS FOR MANUFACTURING

		CRT	EET	AM
780AK001	Adapt automated system for welding applications			X
780AK002	Adapt automated system for painting applications			X
780AK003	Adapt automated system for bonding applications			X
780AK004	Adapt automated system for machining applications			X
780AK005	Adapt automated system for material handling applications			X
780AK006	Adapt automated system for assembly applications			X
780AK007	Adapt automated system for packing applications			X

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

Auto Body Repairer

*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

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DUTY A: Applying Safety Practices

805A001 Apply shop and safety equipment rules
805A002 Apply basic emergency first aid technique
805A003 Demonstrate cardiopulmonary resuscitation techniques
805A004 Complete accident report
805A005 Inspect work area and equipment for safe working environment
805A006 Report shop, environmental and equipment safety violations
805A007 Correct safety hazards
805A008 Participate in disaster control exercises
805A009 Participate in shop safety committee
805A010 Participate in safety training program
805A011 Conduct safety training program
805A012 Apply OSHA regulations
805A013 Demonstrate use of fire extinguishers
805A014 Follow fire code regulations
805A015 Store flammable materials
805A016 Tag cars with operating deficiencies

DUTY B: Performing Housekeeping and Recordkeeping

805B001 Clean and maintain work area and leave in safe condition
805B002 Follow tool crib procedures
805B003 Report problems to supervisor
805B004 Complete time cards
805B005 Complete job status reports
805B006 Participate in participation management program (Quality Circles)

DUTY C: Performing Supervisory Functions

805C001 Determine availability of machines, supplies and materials
805C002 Coordinate workers with work to be done
805C003 Schedule and control shop flow of jobs
805C004 Maintain files
805C005 Explain work requirements
805C006 Inventory supplies and equipment
805C007 Follow up on end product quality control standards
805C008 Check job/time cards
805C009 Inspect shop equipment and arrange for maintenance and repair work
805C010 Coordinate maintenance and repair of shop equipment
805C011 Plan and implement technical training for employees
805C012 Train employees to operate mechanical devices
805C013 Evaluate employee progress and performance
805C014 Plan and implement participation management program (Quality Circles)
805C015 Follow up employee reports of problems or equipment failures
805C016 Interview job applicants
805C017 Hire workers
805C018 Dismiss employees
805C019 Determine work to be done by outside firm
805C020 Write contract for work with outside firm

DUTY D: Estimating Costs of Repairs

805D001 Estimate cost of repairs
805D002 Order auto body parts and supplies
805D003 Write service work orders for vehicle repairs
805D004 Write customer invoices

DUTY E: Maintaining Tools and Equipment

805E001 Perform basic maintenance on painting equipment
805E002 Sharpen and recondition hand tools
805E003 Clean paint guns

DUTY F: Repairing Body Damage

805F001 Inspect body and frame for damage
805F002 Measure body and frame alignment
805F003 Repair and align hood and deck panels
805F004 Repair and align fenders
805F005 Repair and align doors
805F006 Repair and align bumpers
805F007 Remove and replace fender wells
805F008 Repair and adjust tailgates
805F009 Repair and adjust liftgates
805F010 Repair and adjust sun roofs
805F011 Repair quarter panels
805F012 Remove and replace rocker panels
805F013 Repair and align roof panels
805F014 Repair and align rear section damage
805F015 Repair and align front section damage
805F016 Remove and replace radiators and supports
805F017 Remove and install weld-in panels
805F018 Replace fiberglass body panels
805F019 Straighten, repair and align body of vehicle
805F020 Straighten and align floor pans
805F021 Protect gas tanks prior to working on vehicle
805F022 Rough out metals
805F023 Align and fit sheet metal
805F024 Straighten deformed auto body sheet metal
805F025 Repair rust damage with sheet metal
805F026 Remove minor dents from sheet metal
805F027 Remove major dents from sheet metal
805F028 Repair tears in sheet metal
805F029 Hot shrink damaged metal areas
805F030 Arc weld vehicle body parts
805F031 MIG weld vehicle body parts
805F032 Cut and bend metal with O-A equipment
805F033 Repair rust damage with fiberglass
805F034 Repair damaged fiberglass
805F035 Fill and smooth areas with plastic body filler
805F036 Fill and smooth areas with body solder

DUTY G: Repairing Frame Damage

805G001 Diagnose type of frame damage
805G002 Straighten and align sag frame damage
805G003 Straighten and align twist frame damage
805G004 Straighten and align sway frame damage
805G005 Straighten and align diamond frame damage
805G006 Straighten and align mash frame damage
805G007 Repair combination frame damage
805G008 Diagnose damage on unitized frame
805G009 Repair damage on unitized frame
805G010 Repair frame damage on front drive vehicle
805G011 Repair or replace fuel tanks
805G012 Weld frames
805G013 Straighten, repair and align frame of vehicle

DUTY H: Repairing, Replacing, Adjusting and Installing Trim and Accessories

805H001 Replace locks and latches
805H002 Remove, replace and adjust power window control units
805H003 Repair or replace window raising and lowering mechanisms
805H004 Remove and replace seats and shoulder belts
805H005 Remove and replace floor mats and carpets
805H006 Remove and replace grills
805H007 Remove and replace interior trim and molding
805H008 Remove and replace exterior trim and molding
805H009 Drop and install headliner
805H010 Remove and replace weather strips
805H011 Clean interior fabrics
805H012 Clean vehicle for delivery
805H013 Clean and detail vehicle engine compartment

DUTY I: Painting and Refinishing

805I001 Apply corrosion materials
805I002 Apply primer surfacer
805I003 Clean and prepare repaired surfaces for painting
805I004 Dry sand vehicle
805I005 Wet sand vehicle
805I006 Sand surfaces for spot painting
805I007 Mask sections and parts
805I008 Finish painted surfaces
805I009 Heat dry painted surface
805I010 Verify color code match with manufacturer's information
805I011 Verify color match with customer
805I012 Featheredge paint around repaired areas
805I013 Sand primer surfaces
805I014 Apply sealers
805I015 Mix paints
805I016 Apply lacquer
805I017 Apply acrylic enamel
805I018 Apply polyurethane enamel
805I019 Apply alkyd enamel

805I020 Apply undercoats
805I021 Apply clear coats
805I022 Mask vehicle for special painting effects
805I023 Apply special painting effects
805I024 Compound, polish and detail lacquer paint job
805I025 Compound, polish and detail enamel paint job

DUTY J: Removing and Installing Glass

805J001 Remove and replace windshield
805J002 Remove and replace rear glass
805J003 Remove and replace door glass
805J004 Adjust or align windows in doors
805J005 Remove and replace vent window assembly
805J006 Remove and replace quarter windows
805J007 Remove and replace sun roof glass
805J008 Remove and replace rear tailgate glass
805J009 Remove damaged glass and install replacement
805J010 Test for and seal leaks

DUTY K: Repairing Electrical Body Components

805K001 Align head lamps
805K002 Insure vehicle lights are operational
805K003 Service battery
805K004 Replace defective light bulbs
805K005 Repair or replace damaged electrical components
805K006 Replace turn signals or flasher units
805K007 Troubleshoot vehicle electrical system

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

Bus Driver

*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

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DUTY A: Performing Pre-Trip Inspection

810A001 Inspect exterior of unit for general appearance and condition
810A002 Inspect interior of unit for general appearance and condition
810A003 Check safety equipment
810A004 Secure cargo
810A005 Conduct performance inspection within first twenty-five miles

DUTY B: Performing Pre-Trip Recordkeeping

810B001 Sign prepared condition report
810B002 Check for accident reports packet
810B003 Check route

DUTY C: Backing and Parking

810C001 Back unit using mirrors
810C002 Park unit
810C003 Secure unit when parked
810C004 Enter traffic from parked position

DUTY D: Slowing and Stopping

810D001 Slow unit using brakes
810D002 Slow unit by gearing down
810D003 Stop unit
810D004 Apply cool down and shut off procedures

DUTY E: Operating in Traffic, Passing and Turning

810E001 Drive unit through turns
810E002 Drive unit through intersections
810E003 Drive unit across railroad grades
810E004 Drive unit on open highway
810E005 Pass other vehicles on two-lane highway
810E006 Pass other vehicles on four-or-more-lane highway

DUTY F: Placing Vehicle in Motion and Using Controls

810F001 Start and warm up engine
810F002 Check instruments at regular intervals
810F003 Maintain proper engine revolutions per minute while driving
810F004 Test service brake
810F005 Build full pressure in air tanks before starting

DUTY G: Keeping Records for Pickup and Delivery

810G001 Fill out logbooks as prescribed by Federal regulations
810G002 Notify dispatch immediately in event of an emergency
810G003 Report delays to company
810G004 Complete accident reports
810G005 Follow company postaccident reporting procedures
810G006 Complete daily vehicle condition report
810G007 Fill out detention report
810G008 Follow inspection station procedures

DUTY H: Performing Emergency Procedures

810H001 Change tires
810H002 Make emergency repairs to electrical system
810H003 Make emergency repairs to damaged water lines
810H004 Respond to emergency involving personal injury
810H005 Respond to emergency involving vehicle damage
810H006 Perform first aid on burns
810H007 Perform first aid for shock
810H008 Perform first aid for external bleeding
810H009 Apply liability and Good Samaritan laws regarding emergency first aid
810H010 Operate citizens band (CB) radio equipment
810H011 Prepare vehicle and roadway for disabled vehicle

DUTY I: Complying with Licensing Regulations

810I001 Read and interpret U.S. Department of Transportation regulations
810I002 Read and interpret State Department of Transportation regulations
810I003 Take and pass U.S. Department of Transportation Motor Carrier Regulations written test
810I004 Take and pass U.S. Department of Transportation Motor Carrier Regulations road test
810I005 Take and pass State Department of Transportation driver's written test
810I006 Take and pass State Department of Transportation driver's road test
810I007 Attend necessary licensing seminars
810I008 Obtain and maintain necessary driving permits

DUTY J: Performing Bus Driving Skills

810J001 Load baggage
810J002 Unload baggage
810J003 Assist passengers with baggage
810J004 Record cash receipts
810J005 Collect tickets and fares

810J006 Regulate coach environment for passenger comfort
810J007 Report delays to passengers
810J008 Transport passengers over specified route according to time schedule
810J009 Admonish individuals to be seated and orderly while en route

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

Drafter/Computer–Aided Drafter

*Employability Skills

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DUTY A: Planning and Organizing Activities

815A001 Determine scope of a drafting job
815A002 Determine numbers and sizes of drawings
815A003 Apply appropriate drafting standards to drawings
815A004 Select appropriate drafting techniques for assigned drawings
815A005 Maintain supporting documents for drawing files

DUTY B: Researching Information

815B001 Locate information using manufacturers' catalogs
815B002 Locate information using engineering handbooks
815B003 Locate information using microfilm files
815B004 Locate information using computer data files
815B005 Confirm materials availability
815B006 Research architectural graphic standards

DUTY C: Performing General Office Procedures

815C001 Maintain client rapport
815C002 Participate in client conferences
815C003 Interpret plans
815C004 Coordinate work with engineering personnel
815C005 Coordinate work with welding shop personnel
815C006 Coordinate work with sheet metal shop personnel
815C007 Coordinate architectural drawings
815C008 Coordinate civil drawings
815C009 Coordinate structural drawings
815C010 Coordinate mechanical drawings
815C011 Coordinate electrical drawings
815C012 Coordinate other drawings
815C013 Check plan dimensions
815C014 Maintain drafting instruments and equipment
815C015 Clean drafting instruments and equipment
815C016 File original working drawings
815C017 Maintain and care for CAD work station
815C018 Start up, log/on, retrieve, save, log/off and shut down CAD system
815C019 Analyze and communicate equipment failure
815C020 Produce schedules

DUTY D: Preparing Sketches

815D001 Draw freehand sketches
815D002 Draw isometric sketches
815D003 Draw orthographic sketches
815D004 Draw pictorial sketches
815D005 Read and transfer measurements
815D006 Prepare proportional design sketches
815D007 Draw oblique sketches

DUTY E: Performing Basic Layouts

815E001 Work from written instructions to produce drawings
815E002 Work from verbal instructions to produce drawings
815E003 Perform basic layouts to specified tolerances
815E004 Render designs in pencil

DUTY F: Detailing Drawings

815F001 Draw individual parts from assembly drawings
815F002 Draw individual parts from existing parts
815F003 Interpret assembly drawings
815F004 Draw orthographic projections
815F005 Draw sectional views
815F006 Draw auxiliary views
815F007 Draw isometric views
815F008 Draw intersection and development drawings
815F009 Dimension and tolerance drawings
815F010 Apply geometric tolerances to drawings
815F011 Apply standard fits to drawings
815F012 Apply x-y coordinate dimensioning standards to drawings
815F013 Add title block information to drawings
815F014 Letter presentation drawings
815F015 Note special instructions on drawings

DUTY G: Using Reproduction Techniques

815G001 Reproduce drawings on blueprint machines
815G002 Reproduce drawings on dry copy machines
815G003 Create hard copy using a plotter
815G004 Create hard copy using a printer
815G005 Copy existing drawings using digitizing techniques

DUTY H: Performing Presentation Techniques

815H001 Prepare plan abbreviations list
815H002 Produce graphs
815H003 Produce flow diagrams

DUTY I: Producing Architectural Drawings

815I001 Construct architectural symbols
815I002 Produce representative architectural drawings
815I003 Interpret local, state and federal architectural codes
815I004 Complete FHA specification forms
815I005 Check architectural drawings
815I006 Draw presentation floor plans
815I007 Draw presentation elevation views
815I008 Draw one point interior presentation views
815I009 Draw two point interior presentation views
815I010 Draw exterior perspective views
815I011 Illustrate landscape features

815I012 Sketch preliminary plan layouts
815I013 Sketch preliminary elevations
815I014 Sketch preliminary sections
815I015 Draw scaled floor plans
815I016 Draw foundation plans
815I017 Draw foundation sections
815I018 Reproduce common plan features
815I019 Draw exterior elevations
815I020 Draw framing plans
815I021 Draw typical wall sections
815I022 Draw parapet and roof sections
815I023 Dimension section drawings
815I024 Draw stair sections
815I025 Draw fireplace sections
815I026 Draw chimney sections
815I027 Draw door sections
815I028 Draw window sections
815I029 Draw bathroom sections
815I030 Draw cabinet sections and details
815I031 Draw millwork (trim) sections
815I032 Draw door and window schedules
815I033 Draw finish schedules
815I034 Draw floor sections
815I035 Draw attic sections
815I036 Draw shaft sections
815I037 Draw typical closet sections
815I038 Prepare residential house plumbing plans
815I039 Prepare residential house HVAC plans
815I040 Prepare residential house electrical plans

DUTY J: Drawing Light Commercial Building Plans

815J001 Draw commercial building floor plans
815J002 Draw commercial building foundation plans
815J003 Draw commercial building framing plans
815J004 Draw commercial building roof plans
815J005 Draw commercial building site plans
815J006 Draw commercial building elevations
815J007 Construct commercial building section drawings
815J008 Prepare commercial building door, window and finish schedules
815J009 Prepare commercial building plumbing plans
815J010 Prepare commercial building HVAC plans
815J011 Prepare commercial building electrical plans
815J012 Prepare commercial building landscape plans
815J013 Dimension commercial building plans
815J014 Check commercial building plans
815J015 Prepare commercial building quantity estimates

DUTY K: Producing Structural Working Drawings

815K001 Construct structural drafting symbols
815K002 Interpret local, state and federal structural codes
815K003 Prepare bills of materials from structural drawings

815K004 Draw structural steel plans
815K005 Dimension structural steel drawings
815K006 Draw beam connections
815K007 Construct column detail drawings
815K008 Construct detail truss drawings for timber
815K009 Prepare structural foundation and slab plans
815K010 Prepare structural floor framing plans
815K011 Prepare structural roof framing plans
815K012 Draw structural sections and details
815K013 Draw structural concrete foundation plans
815K014 Prepare column and beam schedule for structural steel
815K015 Prepare column and beam schedule for reinforcing steel
815K016 Check structural drawings

DUTY L: Producing Mechanical Working Drawings

815L001 Construct mechanical drafting symbols
815L002 Construct sheet metal drafting symbols
815L003 Construct tool design symbols
815L004 Prepare bills of materials from mechanical drawings
815L005 Produce parts lists for mechanical assembly drawings
815L006 Construct mechanical orthographic assembly drawings
815L007 Construct mechanical orthographic subassembly drawings
815L008 Detail components of mechanical orthographic assembly drawings
815L009 Detail components of mechanical orthographic subassembly drawings
815L010 Construct mechanical isometric assembly drawings
815L011 Construct mechanical isometric subassembly drawings
815L012 Construct mechanical isometric exploded view drawings
815L013 Construct jig drawings
815L014 Construct fixture drawings
815L015 Construct sheet metal development drawings
815L016 Construct HVAC drawings
815L017 Construct forming die drawings
815L018 Check mechanical drawings
815L019 Design new equipment

DUTY M: Producing Electrical and Electronic Working Drawings

815M001 Construct electrical drafting symbols
815M002 Construct electronic drafting symbols
815M003 Prepare bills of materials from electrical drawings
815M004 Prepare bills of materials from electronic drawings
815M005 Interpret local, state and federal electrical codes
815M006 Draw electrical block diagrams
815M007 Draw electrical schematic diagrams
815M008 Draw electrical connection diagrams
815M009 Draw electronic block diagrams
815M010 Draw electronic schematic diagrams
815M011 Draw electronic connection diagrams
815M012 Draw industrial controls ladder diagrams
815M013 Draw electrical power single-line diagrams

DUTY N: Producing Civil Engineering Drawings

815N001 Produce detailed construction drawings
815N002 Develop topographical profiles
815N003 Develop specification sheets for highway construction
815N004 Develop specification sheets for river and harbor improvements
815N005 Produce plans for flood control

DUTY O: Using CAD Command Processes

8150001 Build data base
8150002 Edit data base
8150003 Create plotter files
8150004 Create disk files
8150005 Copy disk files
8150006 Execute specialized programs
8150007 Develop backup files
8150008 Restore backup files
8150009 Develop configure/control changes
8150010 Develop execute lists using command language
8150011 Write simple FORTRAN program

DUTY P: Producing Drawings Using CAD

815P001 Generate grid on drawing
815P002 Select appropriate geometry to create lines, circles and arcs
815P003 Select appropriate geometry to create curves, tangents, fillets, chamfers and bevels
815P004 Develop three-dimensional drawings
815P005 Select appropriate line work, weights and color
815P006 Apply layering techniques

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS
1988

Truck Driver

*Employability Skills

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DUTY A: Performing Pre-Trip Inspection

820A001 Inspect exterior of unit for general appearance and condition
820A002 Inspect interior of unit for general appearance and condition
820A003 Check safety equipment
820A004 Secure cargo
820A005 Check specialized cargo handling equipment
820A006 Conduct performance inspection before leaving terminal

DUTY B: Performing Pre-Trip Recordkeeping

820B001 Check and secure tractor trailer or vehicle permit
820B002 Sign prepared condition report
820B003 Check freight bills
820B004 Check for accident reports packet
820B005 Check route
820B006 Check hazardous materials placards
820B007 Complete hazardous materials loading chart
820B008 Obtain gross-ton weight

DUTY C: Coupling and Uncoupling Trailers

820C001 Align tractor to trailer before backing
820C002 Connect gladhands to trailer brakes before coupling
820C003 Connect gladhands and light line
820C004 Couple tractor to trailer
820C005 Raise and lower landing gear fully
820C006 Check visually kingpin assembly for proper coupling
820C007 Check coupling and try to pull away from trailer
820C008 Check that surface will support trailer before uncoupling

DUTY D: Backing and Parking

820D001 Back unit using mirrors
820D002 Park unit
820D003 Secure unit when parked
820D004 Enter traffic from parked position

DUTY E: Slowing and Stopping

820E001 Slow unit using brakes
820E002 Slow unit by gearing down
820E003 Stop unit
820E004 Apply cool down and shut off procedures

DUTY F: Operating in Traffic, Passing and Turning

820F001 Drive unit through turns
820F002 Drive unit through intersections

820F003 Drive unit across railroad grades
820F004 Drive unit on open highway
820F005 Pass other vehicles on two-lane highway
820F006 Pass other vehicles on four-or-more-lane highway

DUTY G: Placing Vehicle in Motion and Using Controls

820G001 Start and warm up engine
820G002 Check instruments at regular intervals
820G003 Maintain proper engine revolutions per minute while driving
820G004 Check tractor-protection valve
820G005 Test service brake
820G006 Build full pressure in air tanks before starting

DUTY H: Keeping Records for Pickup and Delivery

820H001 Fill out logbooks as prescribed by Federal regulations
820H002 Notify dispatch immediately in event of emergency
820H003 Report delays to company
820H004 Complete accident reports
820H005 Follow company postaccident reporting procedures
820H006 Complete daily vehicle condition report
820H007 Fill out detention report
820H008 Place hazardous materials shipping papers on driver's seat when vehicle is unattended
820H009 Note damaged merchandise exceptions on shipping document dispatch
820H010 Inspect cargo condition prior to delivery
820H011 Handle cash on delivery (C.O.D.) shipments
820H012 Verify door seal number against shipping document
820H013 Fill out trip lease reports
820H014 Follow Port of Entry and Exit procedures
820H015 Follow inspection station procedures

DUTY I: Performing Emergency Procedures

820I001 Change tires
820I002 Make emergency repairs to electrical system
820I003 Make emergency repairs to damaged water lines
820I004 Service refrigerator unit to insure air, fuel, oil and water
820I005 Respond to emergency involving personal injury
820I006 Respond to emergency involving vehicle damage
820I007 Respond to emergency involving other damage
820I008 Perform first aid on burns
820I009 Perform first aid for shock
820I010 Perform first aid for external bleeding
820I011 Apply liability and Good Samaritan laws regarding emergency first aid
820I012 Operate citizens band (CB) radio equipment

DUTY J: Complying with Licensing Regulations

820J001 Read and interpret U.S. Department of Transportation regulations
820J002 Read and interpret State Department of Transportation regulations
820J003 Take and pass U.S. Department of Transportation Motor Carrier Safety Regulations written test
820J004 Take and pass U.S. Department of Transportation Motor Carrier Safety Regulations road test
820J005 Take and pass State Department of Transportation driver's written test
820J006 Take and pass State Department of Transportation driver's road test
820J007 Attend necessary licensing seminars
820J008 Obtain and maintain necessary driving permits

DUTY K: Transferring Cargo

820K001 Load cargo
820K002 Unload cargo

Education
For
Employment
Task Lists

Illinois
State Board of
Education

Adult
Vocational and
Technical Education

INDUSTRIAL OCCUPATIONS

1988

Correction Officers and Jailers

*Employability Skills

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DUTY A: Acquiring and Maintaining a Uniform

825A001 Acquire uniform
825A002 Maintain the uniform in serviceable condition
825A003 Care for and clean equipment

DUTY B: Patrolling Areas

825B001 Demonstrate foot patrol methods
825B002 Patrol area on foot
825B003 Inspect patrol vehicle and equipment
825B004 Demonstrate vehicle patrol methods
825B005 Patrol area in a vehicle

DUTY C: Handling Misdemeanors

825C001 Handle officer-witnessed misdemeanors
825C002 Handle misdemeanors not witnessed by an officer

DUTY D: Handling Felonies

825D001 Manage felony calls
825D002 Complete a preliminary felony investigation
825D003 Gather and process physical evidence of a felony

DUTY E: Making Arrests

825E001 Assess the arrest situation
825E002 Make the arrest
825E003 Inform suspect of their rights

DUTY F: Testifying in Court

825F001 Prepare for court
825F002 Testify in court

DUTY G: Maintaining and Using Weapons

825G001 Inspect handguns
825G002 Care for and maintain handguns
825G003 Qualify with handguns
825G004 Use handguns
825G005 Secure handguns
825G006 Inspect shotguns
825G007 Care for and maintain shotguns
825G008 Qualify with shotguns
825G009 Use shotguns
825G010 Secure shotguns
825G011 Inspect shoulder arms
825G012 Care for and maintain shoulder arms

825G013 Qualify with shoulder arms
825G014 Use shoulder arms
825G015 Secure shoulder arms
825G016 Use chemical agents for control

DUTY H: Handling Fire Scenes

825H001 Assess the fire scene situation
825H002 Expedite fire fighting efforts
825H003 Guard fire lines and property at the fire scene

DUTY I: Handling Disaster Scenes

825I001 Assess the disaster scene situation
825I002 Expedite disaster scene rescue efforts
825I003 Guard disaster scene lines and property

DUTY J: Handling Unlawful Gatherings

825J001 Assess the situation at the scene of an unlawful gathering
825J002 Detect persons inciting or agitating a gathering
825J003 Remove persons inciting or agitating a gathering

DUTY K: Handling Public Service Calls and Inquiries

825K001 Receive inquiries
825K002 Respond to inquiries
825K003 Receive public service calls
825K004 Respond to public service calls

DUTY L: Handling Mentally Ill Persons

825L001 Assess the situation and mental condition of the person
825L002 Determine the safest and best techniques to take the mentally ill person into custody
825L003 Take the mentally ill person into custody
825L004 Transport the mentally ill person to evaluation center
825L005 Check the mentally ill person into mental health facility

DUTY M: Handling the Service and Return of Court Documents

825M001 Receive document and determine type (civil, criminal)
825M002 Determine a plan for servicing a service document
825M003 Return any pertinent information and the document

DUTY N: Handling Suspicious Persons

825N001 Assess the situation involving a suspicious person
825N002 Confront and question suspicious person
825N003 Record and report information on suspicious person

DUTY O: Handling a Dead On Arrival (DOA)

825O001 Receive and record information on the DOA
825O002 Assess the condition of the victim
825O003 Perform preliminary investigation on the DOA
825O004 Make arrests if warranted

DUTY P: Conducting Emergency Procedures

825P001 Administer first aid to relieve shock
825P002 Administer first aid for burns
825P003 Administer cardiopulmonary resuscitation (CPR)
825P004 Administer back pressure/arm lift artificial resuscitation
825P005 Administer mouth-to-mouth artificial resuscitation
825P006 Conduct a fire drill
825P007 Respond to apparent epileptic seizure
825P008 Respond to apparent diabetic coma or insulin shock
825P009 Respond to suicide attempt
825P010 Respond to escape or escape attempt
825P011 Respond to hostage situation

DUTY Q: Handling Special Events

825Q001 Prepare for special events
825Q002 Handle large gatherings

DUTY R: Handling Gambling, Vice and Sex Offenses

825R001 Detect gambling offenses
825R002 Detect sex offenses

DUTY S: Filing Reports and Serving on Committees

825S001 Select form and format for report
825S002 Complete reports
825S003 Complete a property report
825S004 Complete a denial of treatment or service form
825S005 Complete a log
825S006 Prepare an observation report for confined inmates
825S007 Complete an incident report form
825S008 Complete a corrective consultation report
825S009 Complete a disciplinary report
825S010 Complete a "use of force" report
825S011 Conduct a disciplinary report investigation
825S012 Serve on a classification hearing

825S013 Serve on a disciplinary report hearing
825S014 Complete referrals for psychological evaluation
825S015 Review a transfer order for compliance

DUTY T: Dealing with Confidential Informants

825T001 Develop informant contacts
825T002 Use informant contacts
825T003 Protect confidentiality of informants

DUTY U: Booking Prisoners

825U001 Book prisoners
825U002 Complete arrest paperwork
825U003 Evaluate possibility for bonding
825U004 Oversee exit bonding procedures
825U005 Fingerprint arrestee
825U006 Photograph arrestee
825U007 Conduct prisoner shower/spray
825U008 Evaluate prisoner for medical screening

DUTY V: Conducting Searches and Seizures

825V001 Search an open area
825V002 Search an enclosed area
825V003 Search a vehicle
825V004 Search person using a frisk search
825V005 Search person using a strip search

DUTY W: Restraining Violators

825W001 Restrain person with hand hold
825W002 Restrain person with physical methods
825W003 Restrain person with handcuffs
825W004 Restrain person with leg irons
825W005 Restrain inmate with straitjacket

DUTY X: Applying Narcotic Enforcement

825X001 Determine if narcotic crime is being planned or committed
825X002 Identify narcotic law violators
825X003 Obtain information and evidence of narcotic law violation
825X004 Locate contraband or stolen property

DUTY Y: Handling Alcohol Impaired Persons

825Y001 Assess the situation and condition of the alcohol impaired person
825Y002 Determine the safest and best techniques to take the alcohol impaired person into custody
825Y003 Take the alcohol impaired person into custody
825Y004 Collect information and evidence of liquor violation
825Y005 Transport the alcohol impaired person to evaluation center
825Y006 Check the alcohol impaired person into appropriate facility

DUTY Z: Handling a Bomb Threat

825Z001 Evacuate threatened premises and surrounding area
825Z002 Conduct preliminary bomb search
825Z003 Call in bomb squad for disposition of suspicious materials

DUTY AA: Performing Guard Duty

825AA001 Escort/guard designated persons
825AA002 Escort/guard money carriers
825AA003 Coordinate guard functions with other agencies
825AA004 Check area of employer's premises
825AA005 Prepare guard plans
825AA006 Determine physical security manpower requirements
825AA007 Develop physical security emergency control plans
825AA008 Issue guard orders
825AA009 Inspect posts
825AA010 Monitor guard operations
825AA011 Monitor prisoners
825AA012 Monitor curfews
825AA013 Relieve guard personnel
825AA014 Guard entry/exit to restricted areas
825AA015 Guard gate or fixed post
825AA016 Guard perimeters of employer's premises
825AA017 Secure housing areas
825AA018 Test intrusion detection systems
825AA019 Investigate intrusions detected by alarms
825AA020 Transport arrestees/persons in custody
825AA021 Transport prisoners
825AA022 Control personnel/vehicle movement in restricted area
825AA023 Conduct vehicle escorts
825AA024 Establish barricades/roadblocks
825AA025 Send and receive radio transmissions
825AA026 Inspect mail
825AA027 Prepare list of confiscated and mailed items
825AA028 Detect and report pilferage incidents
825AA029 Detect and report sabotage incidents
825AA030 Investigate reports of sabotage/pilferage
825AA031 Check and verify passes and badges
825AA032 Maintain ID card/badges log
825AA033 Maintain access list/log
825AA034 Maintain visitor log
825AA035 Provide guidance/information to visitors

825AA036 Maintain lock and key list/log
825AA037 Control locks and keys
825AA038 Investigate lock and key losses
825AA039 Work with guard dogs

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

Electric Home Appliance and Power Tool Repairer

*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

These materials were prepared under contract with the Illinois State Board of Education, Department of Adult, Vocational and Technical Education ("Illinois Competency Based Vocational Education Project," contract number PS-10-130).

ELECTRIC HOME APPLIANCE AND POWER TOOL REPAIRER

DUTY A: Applying Safety Practices

850A001 Apply basic emergency first aid techniques
850A002 Complete accident report
850A003 Inspect work area and equipment for safe working environment
850A004 Report shop, environmental and equipment safety violations
850A005 Demonstrate use of fire extinguishers
850A006 Participate in shop safety committee
850A007 Correct safety hazards
850A008 Demonstrate cardiopulmonary resuscitation (CPR) techniques

DUTY B: Analyzing DC Circuits

850B001 Read and interpret color codes
850B002 Analyze, construct and troubleshoot series circuits
850B003 Analyze, construct and troubleshoot parallel circuits
850B004 Analyze, construct and troubleshoot series-parallel circuits
850B005 Analyze, construct and troubleshoot voltage dividers
850B006 Analyze, construct and verify maximum power theory
850B007 Analyze, construct and troubleshoot resistance x capacitance (RC) and resistance x inductance (RL) circuits

DUTY C: Analyzing AC Circuits

850C001 Set up and operate frequency counters and signal generators for AC circuits
850C002 Analyze, construct and troubleshoot AC capacitive circuits using a schematic
850C003 Analyze, construct and troubleshoot AC inductive circuits using a schematic
850C004 Analyze and apply principles of transformers to AC circuits using a schematic
850C005 Analyze, construct and troubleshoot resistor, capacitor and inductor (RCL) circuits using a schematic
850C006 Analyze, construct and troubleshoot series and parallel resonant circuits using a schematic
850C007 Analyze, construct and troubleshoot filter circuits using a schematic

DUTY D: Performing Precision Measurement

850D001 Measure parts with semiprecision measuring tools
850D002 Inspect parts with precision measuring tools
850D003 Clean and store precision measuring tools
850D004 Verify dimensions
850D005 Verify alignments
850D006 Verify clearances
850D007 Inspect assemblies
850D008 Inspect parts with metric measuring instruments

DUTY E: Operating Drilling Machines

850E001 Select drills using drill chart
850E002 Change drills and tool holders
850E003 Center drill and drill holes to size
850E004 Perform basic drilling machine maintenance
850E005 Set up precision drills

DUTY F: Operating Bench Grinders

850F001 Change and dress bench grinding wheels
850F002 Sharpen and recondition hand tools
850F003 Rough grind materials
850F004 Perform basic bench grinder maintenance

DUTY G: Performing Benchwork Operations

850G001 Cut threads with taps and dies
850G002 Remove threaded fasteners and repair threads
850G003 Finish parts with hand grinders
850G004 Disassemble, assemble and straighten parts using arbor press
850G005 Disassemble, fit and reassemble parts
850G006 Repair hand tools
850G007 Plan assembly operations
850G008 Work materials with hand tools
850G009 Work materials with portable power tools

DUTY H: Conducting Shop Operations

850H001 Answer customer questions
850H002 Troubleshoot customer problems
850H003 Maintain records of service tools and equipment
850H004 Maintain equipment inventory
850H005 Maintain call record report
850H006 Update service manuals
850H007 Update parts catalogs
850H008 Modify wiring diagrams to reflect repair changes
850H009 Order parts and supplies
850H010 Receive and store parts and supplies
850H011 Unpack and inspect new equipment
850H012 Demonstrate appliance functions
850H013 Instruct customer in operation and care of appliance
850H014 Complete warranty cards/records
850H015 Read maps to locate business
850H016 Call for and deliver appliances
850H017 Obtain and check work order to determine problem
850H018 Determine repair method
850H019 Estimate time, cost and feasability of appliance repair
850H020 Estimate time, cost and feasability of power tool repair
850H021 Obtain parts from inventory
850H022 Make out materials lists used on each job
850H023 Calculate repair costs

850H024 Prepare service bill
850H025 Complete work orders
850H026 Call office for assistance or next job
850H027 Make service calls

DUTY I: Performing Housekeeping and Recordkeeping

850I001 Clean and maintain work area and leave in safe condition
850I002 Follow tool crib procedures
850I003 Report problems to supervisor
850I004 Complete time cards
850I005 Complete job status reports
850I006 Make equipment failure reports
850I007 Use manuals to determine basic maintenance procedures
850I008 Participate in participation management program (Quality Circles)
850I009 Complete logs

DUTY J: Troubleshooting and Repairing Precision Mechanisms

850J001 Align and adjust tension of belt drives
850J002 Troubleshoot and repair belt drives
850J003 Remove and replace belt drive pulleys
850J004 Remove and replace drive belts
850J005 Clean and lubricate drive systems
850J006 Remove and replace gear drives
850J007 Troubleshoot and repair gear drives
850J008 Align and adjust gear drives
850J009 Remove and replace variable speed drives
850J010 Troubleshoot and repair variable speed drives
850J011 Align and adjust variable speed drives
850J012 Remove and replace clutch assemblies
850J013 Troubleshoot and repair clutches
850J014 Adjust clutches
850J015 Remove and replace transmissions
850J016 Troubleshoot and repair transmissions
850J017 Align and adjust transmissions
850J018 Troubleshoot and repair couplings
850J019 Align and adjust couplings
850J020 Remove and replace packings and seals
850J021 Troubleshoot and repair bearing assemblies
850J022 Remove and replace bearing assemblies
850J023 Remove and replace shaft assemblies
850J024 Troubleshoot and repair shaft assemblies
850J025 Align and adjust shaft assemblies
850J026 Remove and replace universal joints
850J027 Troubleshoot and repair universal joints
850J028 Remove and replace linkages and lever mechanisms
850J029 Troubleshoot and repair linkages and lever mechanisms
850J030 Align and adjust linkages and lever mechanisms
850J031 Remove and replace cam assemblies
850J032 Troubleshoot and repair cam assemblies
850J033 Align and adjust cam assemblies
850J034 Remove and replace door-latch assemblies

850J035 Align and adjust door-latch assemblies
850J036 Remove and replace door hardware
850J037 Align and adjust door hardware
850J038 Remove and replace door gaskets
850J039 Adjust appliance brake system
850J040 Remove and replace appliance brake system
850J041 Troubleshoot and repair appliance brake system
850J042 Remove and replace appliance drum rollers
850J043 Adjust appliance drum rollers
850J044 Remove and replace appliance drums
850J045 Troubleshoot and repair appliance drums
850J046 Align and adjust appliance drums
850J047 Remove and replace appliance fan blades and impellers
850J048 Clean appliances
850J049 Touch up appliance cabinets
850J050 Troubleshoot appliance mechanical problems
850J051 Lubricate appliances

DUTY K: Maintaining and Repairing Appliance Plumbing Systems

850K001 Bend copper tubing with spring bender
850K002 Braze pipes with gas torch and filler metal
850K003 Cut copper tubing and pipes with hacksaw
850K004 Cut copper tubing and pipes with tubing cutter
850K005 Join copper tubing to steel pipes
850K006 Remove and replace copper tubing connectors
850K007 Repair copper tubing connectors
850K008 Remove and replace hoses, couplings and gaskets
850K009 Remove and replace appliance water valves
850K010 Troubleshoot and repair appliance water valves
850K011 Remove and replace appliance water pumps
850K012 Troubleshoot and repair appliance water pumps
850K013 Remove and replace appliance float sensors and switches
850K014 Troubleshoot and repair appliance float sensors and switches
850K015 Remove and replace appliance pressure sensors and switches
850K016 Troubleshoot and repair appliance pressure sensors and switches
850K017 Repair appliance watertight containers or units
850K018 Troubleshoot appliance plumbing systems
850K019 Remove and replace appliance plumbing system filters

DUTY L: Maintaining and Repairing Appliance Heating and Cooling Systems

850L001 Calibrate and adjust appliance thermostat
850L002 Remove and replace appliance thermostat
850L003 Troubleshoot and repair appliance thermostat
850L004 Calibrate and adjust appliance thermocouple
850L005 Remove and replace appliance thermocouple
850L006 Troubleshoot and repair appliance thermocouple
850L007 Lubricate appliance air compressor
850L008 Adjust appliance air compressor
850L009 Remove and replace appliance air compressor
850L010 Troubleshoot and repair appliance air compressor
850L011 Clean appliance condenser/evaporator

850L012 Remove and replace appliance condenser
850L013 Troubleshoot and repair appliance condenser
850L014 Remove and replace appliance evaporator
850L015 Troubleshoot and repair appliance evaporator
850L016 Drain and charge window air-conditioning system
850L017 Perform seasonal maintenance on window air conditioner
850L018 Remove and replace appliance dryer/strainer
850L019 Troubleshoot and repair appliance dryer/strainer
850L020 Flush, dehydrate and charge appliance refrigeration system
850L021 Remove and replace appliance refrigeration system valves
850L022 Remove and replace appliance refrigeration system lines
850L023 Clean appliance cooling coils
850L024 Remove and replace appliance cooling coils
850L025 Test appliance refrigeration system for leaks
850L026 Repair appliance refrigeration system leaks
850L027 Troubleshoot and repair appliance refrigeration system
850L028 Calibrate and adjust appliance airflow controls
850L029 Calibrate and adjust appliance temperature controls
850L030 Remove and replace appliance air filters and air bags
850L031 Remove and replace appliance fan
850L032 Troubleshoot and repair appliance fan
850L033 Remove and replace appliance burner controls
850L034 Remove and replace appliance heating elements
850L035 Remove and replace appliance ignition controls
850L036 Remove and replace appliance ignitors
850L037 Troubleshoot and repair appliance ignition systems
850L038 Adjust appliance gas burners
850L039 Remove and replace appliance gas burner assembly
850L040 Clean appliance gas burners
850L041 Remove and replace appliance gas lines
850L042 Remove and replace appliance gas valves
850L043 Remove and replace appliance safety valves
850L044 Remove and replace appliance pressure regulators
850L045 Troubleshoot and repair appliance pressure regulators
850L046 Remove and replace appliance standing pilots
850L047 Troubleshoot and repair appliance standing pilots
850L048 Remove and replace appliance flame sensors
850L049 Test appliance gas lines, connections and valves for leaks
850L050 Repair appliance gas leaks
850L051 Troubleshoot and repair appliance gas burner system
850L052 Remove and replace appliance insulation
850L053 Remove and replace appliance vents
850L054 Install appliance vents
850L055 Install range hood
850L056 Remove and replace range hood

DUTY M: Maintaining and Repairing Electrical Systems

850M001 Replace fuses
850M002 Troubleshoot and repair fuse system
850M003 Troubleshoot electrical control components
850M004 Replace faulty electrical cords and plugs
850M005 Remove and replace motor controls
850M006 Troubleshoot and repair motor controls
850M007 Lubricate electric motor

850M008 Remove and replace electric motor
850M009 Troubleshoot and repair electric motor
850M010 Remove and replace electric motor starter circuit
850M011 Calibrate and adjust sensors
850M012 Remove and replace sensors
850M013 Troubleshoot and repair sensors
850M014 Remove and replace microwave oven magnatron tube
850M015 Troubleshoot and repair microwave oven magnatron tube
850M016 Remove and replace power supply
850M017 Troubleshoot and repair power supply
850M018 Remove and replace solenoid
850M019 Remove and replace condenser
850M020 Remove and replace power transformer
850M021 Troubleshoot and repair power transformer
850M022 Remove and replace panel lights
850M023 Remove and replace appliance buzzers and chimes
850M024 Troubleshoot and repair appliance light and sound systems
850M025 Remove and replace relays and timers
850M026 Troubleshoot and repair relays and timers
850M027 Remove and replace circuit breakers
850M028 Check for overloaded circuits
850M029 Wire parallel circuits
850M030 Wire series circuits
850M031 Wire series-parallel circuits
850M032 Connect single pole switches
850M033 Install single pole switches with pilot light
850M034 Install timer or delayed action switches
850M035 Remove and replace switches
850M036 Troubleshoot and repair switches
850M037 Remove and replace defective wiring
850M038 Clean electrical connections
850M039 Determine adequacy of home wiring
850M040 Determine electrical problems using available troubleshooting techniques
850M041 Interpret control diagrams for electrical systems
850M042 Diagnose malfunctions of electrical systems using test and measurement equipment

DUTY N: Maintaining and Repairing Electronic Systems

850N001 Determine electronic problems using available troubleshooting techniques
850N002 Interpret control diagrams for electronic systems
850N003 Diagnose malfunctions of electronic systems using available test and measurement equipment
850N004 Remove and replace printed circuit boards
850N005 Remove and replace chips
850N006 Remove and replace transistors
850N007 Remove and replace electronic components
850N008 Clean connections on electronic components
850N009 Set user switches
850N010 Troubleshoot and repair electronic components

DUTY O: Installing Major Appliances

8500001 Install dishwasher
8500002 Install electric washing machine
8500003 Install electric clothes dryer
8500004 Install gas clothes dryer
8500005 Install window air conditioner
8500006 Install electric range
8500007 Install gas range
8500008 Install refrigerator
8500009 Install freezer
8500010 Install trash compactor
8500011 Install garbage disposal
8500012 Install microwave oven
8500013 Install icemaker
8500014 Install other major appliances
8500015 Level major appliance
8500016 Adjust doors and latches
8500017 Adjust appliance to specifications
8500018 Inspect appliance to verify operation

DUTY P: Troubleshooting and Repairing Major Appliances

850P001 Troubleshoot and repair dishwasher
850P002 Troubleshoot and repair electric washing machine
850P003 Troubleshoot and repair electric clothes dryer
850P004 Troubleshoot and repair gas clothes dryer
850P005 Troubleshoot and repair window air conditioner
850P006 Troubleshoot and repair electric range
850P007 Troubleshoot and repair gas range
850P008 Troubleshoot and repair refrigerator
850P009 Troubleshoot and repair freezer
850P010 Troubleshoot and repair trash compactor
850P011 Troubleshoot and repair garbage disposal
850P012 Troubleshoot and repair microwave oven
850P013 Troubleshoot and repair other major appliances

DUTY Q: Troubleshooting and Repairing Small Appliances

850Q001 Troubleshoot and repair vacuum cleaner
850Q002 Troubleshoot and repair humidifier
850Q003 Troubleshoot and repair dehumidifier
850Q004 Troubleshoot and repair other small appliances

DUTY R: Troubleshooting and Repairing Bench Power Tools

850R001 Troubleshoot and repair table saw
850R002 Troubleshoot and repair radial arm saw
850R003 Troubleshoot and repair band saw
850R004 Troubleshoot and repair scroll saw
850R005 Troubleshoot and repair bench lathe
850R006 Troubleshoot and repair bench grinder
850R007 Troubleshoot and repair planer

850R008 Troubleshoot and repair joiner
850R009 Troubleshoot and repair bench drill press
850R010 Troubleshoot and repair shop vac
850R011 Troubleshoot and repair power miter box
850R012 Troubleshoot and repair disk and belt sander
850R013 Troubleshoot and repair other bench power tools

DUTY S: Troubleshooting and Repairing Hand Power Tools

850S001 Troubleshoot and repair circular saws
850S002 Troubleshoot and repair drills
850S003 Troubleshoot and repair jig saw
850S004 Troubleshoot and repair router
850S005 Troubleshoot and repair rotary sander
850S006 Troubleshoot and repair belt sander
850S007 Troubleshoot and repair recriprocating sander
850S008 Troubleshoot and repair power screwdrivers
850S009 Troubleshoot and repair staple guns
850S010 Troubleshoot and repair other hand power tools

Education For Employment Task Lists

Illinois State Board of Education

Adult Vocational and Technical Education

INDUSTRIAL OCCUPATIONS

1988

Office Machine/Cash Register Repairer

*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

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DUTY A: Applying Safety Practices

855A001 Apply basic emergency first aid techniques
855A002 Complete accident report
855A003 Inspect work area and equipment for safe working environment
855A004 Report shop, environmental and equipment safety violations
855A005 Demonstrate use of fire extinguishers
855A006 Participate in shop safety committee
855A007 Correct safety hazards
855A008 Demonstrate cardiopulmonary resuscitation (CPR) techniques

DUTY B: Analyzing DC Circuits

855B001 Read and interpret color codes
855B002 Analyze, construct and troubleshoot series circuits
855B003 Analyze, construct and troubleshoot parallel circuits
855B004 Analyze, construct and troubleshoot series-parallel circuits
855B005 Analyze, construct and troubleshoot voltage dividers
855B006 Analyze, construct and verify maximum power theory
855B007 Analyze, construct and troubleshoot resistance x capacitance (RC) and resistance x inductance (RL) circuits

DUTY C: Analyzing AC Circuits

855C001 Set up and operate frequency counters and signal generators for AC circuits
855C002 Analyze, construct and troubleshoot AC capacitive circuits using a schematic
855C003 Analyze, construct and troubleshoot AC inductive circuits using a schematic
855C004 Analyze and apply principles of transformers to AC circuits using a schematic
855C005 Analyze, construct and troubleshoot resistor, capacitor and inductor (RCL) circuits using a schematic
855C006 Analyze, construct and troubleshoot series and parallel resonant circuits using a schematic
855C007 Analyze, construct and troubleshoot filter circuits using a schematic

DUTY D: Analyzing Solid State Devices

855D001 Analyze, construct and troubleshoot simple common base amplifiers using a schematic
855D002 Analyze, construct and troubleshoot simple common emitters using a schematic
855D003 Analyze, construct and troubleshoot simple common collectors using a schematic
855D004 Examine field effect transistor (FET) characteristics
855D005 Analyze, construct and troubleshoot simple common sources using a schematic
855D006 Analyze, construct and troubleshoot simple common drains using a schematic

855D007 Analyze, construct and troubleshoot simple common gains using a schematic
855D008 Analyze, construct and troubleshoot thyristors using a schematic
855D009 Analyze, construct and troubleshoot integrated circuit operational amplifiers using a schematic
855D010 Analyze, construct and troubleshoot optoelectronic devices using a schematic

DUTY E: Conducting Shop Operations

855E001 Answer customer questions
855E002 Troubleshoot customer problems
855E003 Perform public relations activities
855E004 Establish customer and equipment history file
855E005 Establish customer files
855E006 Maintain records of service tools and equipment
855E007 Maintain equipment inventory
855E008 Maintain call record report
855E009 Update service manuals
855E010 Update parts catalogs
855E011 Update on-site maintenance log
855E012 Order parts and supplies
855E013 Receive and store parts and supplies
855E014 Unpack and inspect new equipment
855E015 Prepare items for shipping
855E016 Demonstrate office equipment functions
855E017 Instruct customer in operation and care of office equipment
855E018 Complete warranty cards/records
855E019 Read maps to locate business
855E020 Call for and deliver office machines
855E021 Obtain and check work order to determine problem
855E022 Determine repair method
855E023 Estimate time and cost of office equipment repair
855E024 Obtain parts from inventory
855E025 Obtain loaner item from inventory
855E026 Make out materials lists used on each job
855E027 Calculate repair costs
855E028 Complete a sales slip
855E029 Prepare service bill
855E030 Complete work orders
855E031 Call office for assistance or next job
855E032 Make service calls

DUTY F: Performing Housekeeping and Recordkeeping

855F001 Clean and maintain work area and leave in safe condition
855F002 Follow tool crib procedures
855F003 Report problems to supervisor
855F004 Complete time cards
855F005 Complete job status reports
855F006 Make equipment failure reports
855F007 Use manuals to determine basic maintenance procedures

855F008 Participate in participation management program (Quality Circles)
855F009 Complete logs

DUTY G: Troubleshooting and Repairing Precision Mechanisms

855G001 Align and adjust tension of belt drives
855G002 Troubleshoot and repair belt drives
855G003 Remove and replace belt drive pulleys
855G004 Remove and replace drive belts
855G005 Clean and lubricate drive systems
855G006 Remove and replace gear drives
855G007 Troubleshoot and repair gear drives
855G008 Align and adjust gear drives
855G009 Remove and replace variable speed drives
855G010 Troubleshoot and repair variable speed drives
855G011 Align and adjust variable speed drives
855G012 Remove and replace cycle clutch drives
855G013 Troubleshoot and repair cycle clutch drives
855G014 Align and adjust cycle clutch drives
855G015 Remove and replace chain drives
855G016 Troubleshoot and repair chain drives
855G017 Align and adjust chain drives
855G018 Remove and replace clutch assemblies
855G019 Troubleshoot and repair clutches
855G020 Adjust clutches
855G021 Remove and replace transmissions
855G022 Troubleshoot and repair transmissions
855G023 Align and adjust transmissions
855G024 Troubleshoot and repair couplings
855G025 Align and adjust couplings
855G026 Remove and replace packings and seals
855G027 Troubleshoot and repair bearing assemblies
855G028 Remove and replace bearing assemblies
855G029 Remove and replace shaft assemblies
855G030 Troubleshoot and repair shaft assemblies
855G031 Align and adjust shaft assemblies
855G032 Remove and replace universal joints
855G033 Troubleshoot and repair universal joints
855G034 Remove and replace linkages and lever mechanisms
855G035 Troubleshoot and repair linkages and lever mechanisms
855G036 Align and adjust linkages and lever mechanisms
855G037 Remove and replace cam assemblies
855G038 Troubleshoot and repair cam assemblies
855G039 Align and adjust cam assemblies
855G040 Remove and replace door-latch assemblies
855G041 Align and adjust door-latch assemblies
855G042 Remove and replace door hardware
855G043 Align and adjust door hardware
855G044 Remove and replace door gaskets
855G045 Lubricate office machines
855G046 Remove and replace platens
855G047 Troubleshoot and repair platens
855G048 Align and adjust platens
855G049 Remove and replace rollers

855G050 Troubleshoot and repair rollers
855G051 Align and adjust rollers
855G052 Remove and replace escapement mechanisms
855G053 Troubleshoot and repair escapement mechanisms
855G054 Align and adjust escapement mechanisms
855G055 Remove and replace print carriers
855G056 Troubleshoot and repair print carriers
855G057 Align and adjust print carriers
855G058 Remove and replace print wheels
855G059 Remove and replace print unit
855G060 Remove and replace print head
855G061 Remove and replace ribbons or cartridge
855G062 Remove and replace keyboards
855G063 Troubleshoot and repair keyboards
855G064 Remove and replace switches on keyboards
855G065 Clean keyboards

DUTY H: Maintaining and Repairing Electrical Systems

855H001 Replace fuses
855H002 Troubleshoot and repair fuse system
855H003 Troubleshoot electrical control components
855H004 Replace faulty electrical cords and plugs
855H005 Remove and replace motor controls
855H006 Troubleshoot and repair motor controls
855H007 Lubricate electric motor
855H008 Remove and replace electric motor
855H009 Troubleshoot and repair electric motor
855H010 Remove and replace electric motor starter circuit
855H011 Calibrate and adjust sensors
855H012 Remove and replace sensors
855H013 Troubleshoot and repair sensors
855H014 Remove and replace power supply
855H015 Troubleshoot and repair power supply
855H016 Remove and replace solenoid
855H017 Remove and replace condensor
855H018 Remove and replace power transformer
855H019 Troubleshoot and repair power transformer
855H020 Remove and replace panel lights
855H021 Remove and replace relays and timers
855H022 Troubleshoot and repair relays and timers
855H023 Remove and replace circuit breakers
855H024 Check for overloaded circuits
855H025 Wire parallel circuits
855H026 Wire series circuits
855H027 Wire series-parallel circuits
855H028 Connect single pole switches
855H029 Install timer or delayed action switches
855H030 Remove and replace switches
855H031 Troubleshoot and repair switches
855H032 Remove and replace defective wiring
855H033 Clean electrical connections
855H034 Determine adequacy of office wiring
855H035 Determine electrical problems using available troubleshooting techniques

855H036 Interpret control diagrams for electrical systems
855H037 Diagnose malfunctions of electrical systems using test and measurement equipment

DUTY I: Maintaining and Repairing Electronic Systems

855I001 Determine electronic problems using available troubleshooting techniques
855I002 Interpret control diagrams for electronic systems
855I003 Diagnose malfunctions of electronic systems using available test and measurement equipment
855I004 Remove and replace printed circuit boards
855I005 Troubleshoot and repair printed circuit boards
855I006 Remove and replace logic boards
855I007 Troubleshoot and repair logic boards
855I008 Remove and replace memory boards
855I009 Troubleshoot and repair memory boards
855I010 Remove and replace chips
855I011 Remove and replace transistors
855I012 Remove and replace electronic components
855I013 Clean connections on electronic components
855I014 Set configuration switches
855I015 Set user switches
855I016 Troubleshoot and repair electronic components

DUTY J: Maintaining and Repairing Mechanical Typewriters

855J001 Diagnose mechanical typewriter problems
855J002 Operate mechanical typewriter to determine if problem is equipment or operator related
855J003 Clean mechanical typewriters
855J004 Disassemble mechanical typewriters
855J005 Remove and replace worn parts on mechanical typewriters
855J006 Lubricate mechanical typewriters
855J007 Assemble mechanical typewriters
855J008 Adjust mechanical typewriters
855J009 Perform minor maintenance on mechanical typewriters
855J010 Troubleshoot and repair mechanical typewriters

DUTY K: Maintaining and Repairing Electromechanical Typewriters

855K001 Diagnose electromechanical typewriter problems using schematic and block diagrams and test equipment
855K002 Operate electromechanical typewriter to determine if problem is equipment or operator related
855K003 Troubleshoot and repair op-cam shaft problems on electromechanical typewriters
855K004 Remove and replace op-cam shafts on electromechanical typewriters
855K005 Adjust op-cam shafts on electromechanical typewriters
855K006 Perform preventive maintenance on electromechanical typewriters
855K007 Troubleshoot and repair electromechanical typewriters

DUTY L: Maintaining and Repairing Electronic Typewriters

855L001 Diagnose electronic typewriter problems using schematic and block diagrams and test equipment
855L002 Operate electronic typewriter to determine if problem is equipment or operator related
855L003 Troubleshoot and repair electronic typewriter displays
855L004 Remove and replace electronic typewriter displays
855L005 Clean electronic typewriter
855L006 Perform preventive maintenance on electronic typewriter
855L007 Troubleshoot and repair electronic typewriters

DUTY M: Maintaining and Repairing Printing Calculators

855M001 Diagnose printing calculator problems using schematic and block diagrams and test equipment
855M002 Operate printing calculator to determine if problem is equipment, software or operator related
855M003 Clean electronic printing calculator
855M004 Troubleshoot and repair electronic printing calculator

DUTY N: Maintaining and Repairing Cash Registers

855N001 Diagnose cash register problems using schematic and block diagrams and test equipment
855N002 Operate cash register to determine if problem is equipment, software or operator related
855N003 Troubleshoot and repair cash registers
855N004 Remove and replace cash register cash drawers
855N005 Adjust cash register cash drawers
855N006 Perform preventive maintenance on cash registers

DUTY O: Maintaining and Repairing Copy Machines

8550001 Diagnose copy machine problems using schematic and block diagrams and test equipment
8550002 Operate copy machine to determine if problem is equipment or operator related
8550003 Perform preventive maintenance on copy machine
8550004 Troubleshoot and repair copy machine optic system
8550005 Remove and replace copy machine optic system
8550006 Adjust copy machine optic system
8550007 Perform preventive maintenance on copy machine optic system
8550008 Clean copy machine optic system
8550009 Replace copy machine developer and toner
8550010 Clean copy machine mirrors
8550011 Troubleshoot and repair copy machine rollers
8550012 Remove and replace copy machine rollers
8550013 Remove and replace copy machine wiper blades
8550014 Remove and replace copy machine lamps
8550015 Troubleshoot and repair copy machine wiring
8550016 Remove and replace copy machine wiring harness

8550017 Clear copy machine paper jams
8550018 Troubleshoot and repair copy machine paper feed mechanism
8550019 Remove and replace copy machine paper feed mechanism
8550020 Troubleshoot and repair copy machine sorters/collator
8550021 Remove and replace copy machine sorters/collator
8550022 Remove and replace copy machine drums
8550023 Troubleshoot and repair copy machine document feeders
8550024 Remove and replace copy machine document feeders
8550025 Replace copy machine defuser oil
8550026 Remove and replace copy machine stapler
8550027 Troubleshoot and repair copy machine stapler
8550028 Replace copy machine staples

Education
For
Employment
Task Lists

Illinois
State Board of
Education

Adult
Vocational and
Technical Education

INDUSTRIAL OCCUPATIONS

1988

Telephone and Cable TV Line
Installers/Repairers
*Employability Skills

*Employability skills are a vital component of vocational education programs and should be incorporated into each occupational task list

NOTE:

The duties and tasks found in these matrices form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Orientation level instruction, usually offered in grades 9, 10, and 11, is a vital component of all vocational education programs and provides a strong foundation and vehicle for transitioning into occupational training programs.

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TELEPHONE AND CABLE TV LINE INSTALLERS/REPAIRERS

DUTY A: Applying Safety Practices

860A001 Comply with shop and equipment safety rules
860A002 Apply basic emergency first aid techniques
860A003 Complete accident report
860A004 Inspect work area and equipment for safe working environment
860A005 Report shop, environmental and equipment safety violations
860A006 Demonstrate use of fire extinguishers
860A007 Correct safety hazards
860A008 Demonstrate cardiopulmonary resuscitation (CPR) techniques
860A009 Participate in safety training program

DUTY B: Planning Day's Activities

860B001 Prepare for the day's work
860B002 Organize workload
860B003 Determine route
860B004 Check stock and equipment

DUTY C: Traveling to Job Site

860C001 Inspect vehicle
860C002 Drive defensively
860C003 Locate the address
860C004 Park vehicle
860C005 Secure vehicle
860C006 Protect work area (WAP)

DUTY D: Communicating with Customer

860D001 Identify self
860D002 Verify the work order
860D003 Explain work to be done
860D004 Present added service options for possible sale
860D005 Get customer/owner approval for work to be done

DUTY E: Planning Job on the Job Site

860E001 Visualize total job
860E002 Identify potential safety hazards
860E003 Organize tools and materials
860E004 Determine most efficient route to job site

DUTY F: Performing Work Assignment or Installation

860F001 Activate service drop at pole or pedestal
860F002 Complete drop work to company specs
860F003 Protect or ground service at the house
860F004 Perform necessary tests

DUTY G: Performing Work Assignment or Repair Service of Installation

860G001 Identify service problem
860G002 Isolate service problem
860G003 Make repairs on installation
860G004 Refer repairs to qualified person if needed
860G005 Explain service status to customer

DUTY H: Wrapping-up

860H001 Clean up work area
860H002 Educate customer on service and equipment
860H003 Review service options
860H004 Check for customer satisfaction
860H005 Close out the job (paperwork/data base)